H3-VR
Handy Recorder

Operation Manual

You must read the Usage and Safety Precautions before use.

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  THESE HRTFs WERE MODIFIED BY ZOOM.
  Length: first 64 samples
  Filter: low shelf
Thank you very much for purchasing a ZOOM H3-VR Handy Recorder (hereafter, "H3-VR"). The H3-VR has the following features.

**Capture 360° audio with the high-quality Ambisonic mic**

The Ambisonic mic, which can handle sound pressure input up to 120 dB SPL, can record 360° audio in every direction, including above and below, at high resolutions up to 24-bit/96kHz. With data recorded in an Ambisonic format, you can turn the sound image during playback and extract the sounds of specific directions.

**Easily record spatial audio for virtual-reality content**

Along with Ambisonics A, Ambisonics B FuMa and AmbiX formats are also supported. The mic position can be detected automatically when recording starts. Simply adjust the placement angle while checking the built-in electronic tilt indicator for worry-free playback.

**Simply orient the H3-VR to listen to the desired direction during playback**

By orienting the H3-VR when in tracking playback mode, it can use the built-in motion sensor to generate the playback sound for the desired direction from the data recorded in every direction.

**Re-create the feeling of being there with binaural audio**

Binaural recording, which is intended for playback through headphones, is supported. This recording format recreates the sound that not only reaches the ears of a person directly, but also the sound that is transmitted through the head, face and body.

**360° USB mic and audio interface**

When live streaming, conducting video meetings and recording to DAW software, for example, using the audio interface functions of the H3-VR, you can connect it to a computer to use it as a 360° USB mic or an iOS device to use it as a stereo mic.

**Remote operation from an iPhone/iPad**

By installing a dedicated wireless adapter (BTA-1), and using the H3 Control iOS app, you can control the H3-VR from a short distance away. Using an iPhone or iPad, wirelessly operate the transport, set levels and input metadata, for example, without worrying about noise from touching the built-in interface.

**Unrestricted post-production**

Using the free ZOOM Ambisonics Player application for Windows and Mac, you can convert Ambisonic files to ordinary stereo, binaural and 5.1 surround, for example, and play them back. Moreover, you can extract audio from specific directions to write stereo audio files.
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What is 3D sound?

3D sound overview

While traditional stereo sound captures horizontal placement, three-dimensional sound recording methods also capture up-down and front-back placement to create 3D sound images. The H3-VR supports two 3D methods: Ambisonics and binaural.

Ambisonics formats

Features

• Multiple mics capture sound in all directions: left, right, up, down, front and back.
• Audio sources captured on multiple tracks can be processed, and sound can be extracted from any chosen direction.
• The sound can be rotated. For example, sound can be continuously re-created as the listener turns around to face the opposite direction.
Recording formats

Since the sound recorded by each mic is saved separately in a multichannel format, it can be edited for a variety of playback situations, including 2-channel stereo, 5.1-channel surround and VR video.

• A format (Ambisonics A)
  Audio data for the four directional mics are recorded as is. This format as is cannot reproduce sounds in all directions.

Mic names and recording fields
• B format (Ambisonics B)
  A format data is processed and distributed to four channels (W/X/Y/Z) to produce this audio data. The H3-VR supports FuMa and AmbiX.
Binaural format

Features

- The binaural format records the sound that not only reaches the ears of a person directly, but also the sound that is transmitted through the head, face and body.

- In principle, this is sound recorded as though mics were placed inside both ears of a person. This type of mic setup also exists.

The H3-VR converts audio data recorded with the four mics into binaural format recordings.
Recording examples

Example 1: studio recording

Placing the **H3-VR** in the middle of a band arranged in a circle, a performance that allows the watcher to focus freely on different members can be created by recording in Ambisonics format together with VR video recording.

- **Guitar**
- **Vocal**
- **Bass**
- **Drums**
- **Keyboard**

Example 2: live recording

- By recording a live performance from an audience seat in binaural format, the feeling of actually listening in the live venue can be re-created.
- With the **H3-VR** in the middle of the venue, the sound of the entire place, including reverberations and the audience, can be recorded. Mixing this recording with a line recording from a PA or other audio equipment enables the creation of a more realistic live sound.
Example 3: field recording

• When recording in nature, instead of just focusing on a bird, a stream or another sound source, the complete sound of the natural setting, including reflections from trees, rocks and other objects, can be captured.

• When recording the sound of a train, in addition to the sound of it moving horizontally, vertical changes and reverberations and other sounds from the surrounding space can also be recorded. By turning the sound away from the tracks during playback, the sound of the train passing behind the listener can be re-created realistically.
Names of parts

Front

1. **Built-in Ambisonic mic**
   This Ambisonic mic is comprised of four unidirectional condenser mic capsules. This mic can record a three-dimensional sound with natural depth and width.

2. **REC LED**
   This lights during recording, blinks when recording is paused, and blinks rapidly when the input sound level is high.

3. **REMOTE connector**
   Connect a BTA-1 or other dedicated wireless adapter here. This enables operation of the **H3-VR** from an iOS device using a dedicated controller app.
1 REC LED
   This lights during recording, blinks when recording is paused, and blinks rapidly when the input sound level is high.

2 Display
   This shows various types of information.

3 REC button
   Use this to start/stop recording.

4 REW / button
   Use to search backward to a playback position in a file and to select items.

5 STOP/HOME button
   Use to stop file playback and to open the Home Screen.

6 Power switch
   Use this to turn the power ON/OFF and to disable button operation.

7 FF / button
   Use to search forward to a playback position in a file and to select items.

8 MENU button
   Use to open the Menu and to return to the screen open just before the Menu.

9 PLAY/PAUSE/ENTER button
   Use to start/pause playback of recorded files and to confirm items.
Left and right sides

① VOLUME buttons
Use to adjust the volume.

② PHONE OUT jack
This can output sound to headphones.

③ MIC GAIN dial
Use to adjust the mic gain.

④ USB port
Connect this to a computer or iOS device to use the H3-VR as an audio interface or card reader. The dedicated AC adapter (ZOOM AD-17) can also be connected here to use AC power.

⑤ LINE OUT jack
This can output sound to a connected device.
■ Bottom

① Battery/microSD card compartment cover
Remove when installing or removing batteries and microSD cards.

② Tripod mounting threads
Use these screw threads to attach a tripod (not included).
Preparations

Supplying power

Using batteries

1. After turning the power off, push the battery/microSD card compartment cover down to open it.

2. Install the batteries.
3. Close the battery/microSD card compartment cover.

**NOTE**
- Use only one type of battery (alkaline, NiMH or lithium) at a time.
- If the remaining battery power indicator drops to 0, turn the power off immediately and install new batteries.
- After installing the batteries, set the battery type correctly (→ "Setting the type of batteries used" on page 88).
Using an AC adapter

1. Connect the cable of the dedicated AD-17 AC adapter to the USB port.

![Diagram of connecting cable to USB port]

2. Plug the dedicated AC adapter into an outlet.

![Diagram of plugging AC adapter into outlet]

HINT

- When connected to a computer, power can be supplied by USB.
Inserting microSD cards

1. After turning the power off, push the battery/microSD card compartment cover down to open it.

2. Insert the microSD card into the card slot.

To remove a microSD card, push it further into the slot and then pull it out.
3. Close the battery/microSD card compartment cover.

**NOTE**

- Always make certain that the power is off when inserting or removing a microSD card. Inserting or removing a card while the power is on could result in data loss.
- When inserting a microSD card, be sure to insert the correct end with the top side up as shown.
- Recording and playback are not possible when a microSD card is not loaded in the H3-VR.
- After purchasing a new microSD card, always format it using the H3-VR to maximize performance.

To format a microSD card, see "Formatting microSD cards" on page 98.
Turning the power on/off

Turning the power on

1. Slide the power switch toward \( \bigcirc \) until the display becomes active.

**NOTE**
- If "No SD Card!" appears on the display, confirm that a microSD card is inserted properly.
- If "Invalid SD Card!" appears on the display, the card is not formatted correctly. Format the microSD card (→ "Formatting microSD cards" on page 98) or use a different microSD card (→ "Inserting microSD cards" on page 20).

Turning the power off

1. Slide the power switch toward \( \bigcirc \) until "Goodbye! See You!" appears on the display.
Preventing misoperation (HOLD function)

In order to prevent misoperation, the hold function can be used to disable the buttons on the H3-VR.

Activating the HOLD function

1. Slide the power switch to HOLD.

Deactivating the HOLD function

1. Slide the power switch back to the middle.
Setting the language shown (first time starting up)

The first time you turn the power on after purchase, set the display language when the Language setting screen opens.

1. Use ◀ and ▶ to select the display language, and press ENTER.

This completes setting the language.

HINT

• The display language can also be changed later from the Menu screen (→ "Setting the language shown" on page 94).
Setting the date and time (first time starting up)

The first time you turn the power on after purchase, set the date and time when the Set Date/Time screen opens after the Language setting screen. This data is used to add the date and time to recorded files.

1. Use \( \uparrow \) and \( \downarrow \) to select the item to change, and press \( \text{ENTER} \).

2. Use \( \uparrow \) and \( \downarrow \) to change the value of the selected item, and press \( \text{ENTER} \).

3. Use \( \uparrow \) and \( \downarrow \) to select “OK”, and press \( \text{ENTER} \).

This sets the date and time and opens the Home Screen.

HINT

- The date and time setting can also be changed later from the Menu screen (→ “Setting the date and time” on page 95).
Recording

Home Screen (in recording standby)

1. **Time display**
   This shows either the current elapsed recording time or the remaining available recording time (→ "Setting the recording time display" on page 49).

2. **Status icon**
   This shows the recording status.
   - READY: Ready
   - RECORDING: Recording
   - PAUSED: Paused

3. **Clipping indicators**
   If the clipping indicators light, adjust the input level (→ "Adjusting input levels" on page 37) or set the limiter (→ "Setting the limiter" on page 40).

4. **Track names and level meters**
   These show the track names according to the recording mode (→ "Setting the recording mode" on page 30) and current input levels of each track.

5. **Remaining battery charge**
   This shows the remaining battery charge. When the remaining battery charge becomes low, replace the batteries (→ "Using batteries" on page 17) or connect an AC adapter (→ "Using an AC adapter" on page 19).

6. **Mic gain**
   This shows the current mic gain setting (→ "Adjusting input levels" on page 37).

7. **Mic position**
   This shows the current mic position setting (→ "Setting the mic position" on page 27).

8. **Tilt indicator**
   This shows mic tilt compared to the optimal mic position.
Preparing to record

Setting the mic position

The H3-VR can record sound in every direction, including forward, backward, left, right, up and down. Use Mic Position to set the orientation of the mic and recorder in relation to the forward direction. When Mic Position is kept at its default setting, which is Auto, the built-in motion sensor allows it to always record with normal forward/backward, left/right and up/down position relationships regardless of whether the mics are oriented up, down or forward.

1. Press .

This opens the Menu Screen.

2. Use and to select “Mic Position”, and press .
3. Use `>` and `<` to select the mic position, and press ENTER.

The following mic orientations can be set.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Mic/recorder orientation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto</td>
<td></td>
<td>The <strong>H3-VR</strong> automatically sets the mic position according to its orientation at the start of recording.</td>
</tr>
<tr>
<td>Upright</td>
<td></td>
<td>Use this setting to record with the <strong>H3-VR</strong> upright.</td>
</tr>
<tr>
<td>Upside Down</td>
<td></td>
<td>Use this setting to record with the <strong>H3-VR</strong> upside down.</td>
</tr>
<tr>
<td>Endfire</td>
<td></td>
<td>Use this setting to record with the <strong>H3-VR</strong> oriented horizontally with its display up.</td>
</tr>
<tr>
<td>Endfire Invert</td>
<td></td>
<td>Use this setting to record with the <strong>H3-VR</strong> oriented horizontally with its display down.</td>
</tr>
</tbody>
</table>

The orientation of the **H3-VR** is detected by the motion sensor and shown on the Home Screen. Adjust the angle of the **H3-VR** so that the tilt indicator is centered.
NOTE

• If the Mic Position setting and the mic orientation during recording are not the same, the recording file cannot be made the correct orientation and the front orientation will be off during playback.
• The Mic Position setting can be checked on the Home Screen.
• When the Mic Position setting is “Auto”, an animation will appear guiding you to orient the mic so that it matches the closest of the other four mic position settings. When the mic orientation approaches the correct angle, the tilt indicator will appear on the Home Screen.
• The Mic Position setting becomes fixed when recording starts. The Mic Position setting will not change during recording even if the mic orientation is changed.

HINT

• To minimize reflections, we recommend placing the H3-VR as far from walls and the floor as possible when recording.
Setting the recording mode

Set the file format used to record files.

1. Press \( \equiv \).

This opens the Menu Screen.

2. Use \( \equiv \) and \( \equiv \) to select "Rec Settings", and press \( \equiv \).

3. Use \( \equiv \) and \( \equiv \) to select "Rec Mode", and press \( \equiv \).
4. Use \( \leftarrow \) and \( \rightarrow \) to select the recording mode, and press \( \text{ENTER} \).

![Recording Mode Selection](image)

The following recording modes can be set.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>FuMa</td>
<td>Record as Ambisonics B FuMa format (4-channel).</td>
</tr>
<tr>
<td>AmbiX</td>
<td>Record as Ambisonics B AmbiX format (4-channel).</td>
</tr>
<tr>
<td>Ambisonics A</td>
<td>Record as Ambisonics A format (4-channel).</td>
</tr>
<tr>
<td>Stereo</td>
<td>Record as an ordinary stereo (2-channel) file.</td>
</tr>
<tr>
<td>Binaural</td>
<td>Record as a stereo (2-channel) file that has been converted to binaural.</td>
</tr>
</tbody>
</table>

**NOTE**

- “Binaural” cannot be selected when the recording format is “96k/16bit” or “96k/24bit”.
- When using the H3-VR as an audio interface, “Rec Mode” cannot be set. Instead, the Menu can be used to set the following according to the audio interface mode.
  - Stereo: Binaural (Select “Off” for ordinary stereo or “On” for binaural.)
  - 4ch Ambisonics: Ambisonic Mode (FuMa, AmbiX or Ambisonics A can be selected.)

**HINT**

- The recording mode used to record can be checked in the file information (→ “Checking file information” on page 67).
Setting the recording format

Set the sampling frequency (kHz) and bit rate (bit) in consideration of the audio quality and file size.

1. Press \( \text{MENU} \).

This opens the Menu Screen.

2. Use \( \text{ } \) and \( \text{ } \) to select "Rec Settings", and press \( \text{ } \).

3. Use \( \text{ } \) and \( \text{ } \) to select "Rec Format", and press \( \text{ } \).
4. Use \( \uparrow \) and \( \downarrow \) to select the recording format, and press \( \text{ENTER} \).

![Rec Format]

The recording formats that can be set are shown in order of audio quality (from low to high) and file size (from small to large).

<table>
<thead>
<tr>
<th>Setting</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>44.1k/16bit</td>
<td></td>
</tr>
<tr>
<td>44.1k/24bit</td>
<td></td>
</tr>
<tr>
<td>48k/16bit</td>
<td></td>
</tr>
<tr>
<td>48k/24bit</td>
<td></td>
</tr>
<tr>
<td>96k/16bit</td>
<td></td>
</tr>
<tr>
<td>96k/24bit</td>
<td>The higher the sampling frequency (kHz) and bit rate, the better the audio quality.</td>
</tr>
</tbody>
</table>

**NOTE**

- When the recording format is "96k/16bit" or "96k/24bit", the "Binaural" recording (→ "Setting the recording mode" on page 30) and "Binaural" Ambisonic Monitoring (→ "Setting Ambisonic monitoring" on page 35) modes cannot be used.
Monitoring the input sound

Use headphones, for example, to monitor the input sound and adjust the volume.

1. Connect headphones, for example, to the PHONE OUT jack on the **H3-VR**.

2. Use **VOLUME** to adjust the volume.
**Setting Ambisonic monitoring**

This sets the conversion format when outputting input signals from the PHONE OUT and LINE OUT jacks.

1. Press \( \text{MENU} \).

   ![Menu Screen]

   This opens the Menu Screen.

2. Use \( \text{\textdownarrow} \) and \( \text{\uparrow} \) to select "Input/Output", and press \( \text{ENTER} \).

   ![Input/Output Menu]

3. Use \( \text{\textdownarrow} \) and \( \text{\uparrow} \) to select "Ambisonic Monitor", and press \( \text{ENTER} \).

   ![Ambisonic Monitor Menu]
4. Use ⬅️ and ➔ to select the Ambisonic monitoring mode, and press ENTER.

The following Ambisonic monitoring modes can be set.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>The input sound is converted to ordinary stereo for monitoring.</td>
</tr>
<tr>
<td>Binaural</td>
<td>The input sound is converted to binaural for monitoring.</td>
</tr>
</tbody>
</table>

**NOTE**

- “Binaural” cannot be used when the recording format is “96k/16bit” or “96k/24bit”.
Adjusting input levels

The input level used during recording can be adjusted.

1. Turn \textbf{MIC GAIN} to adjust the input level.

The changed input level is shown on the display.
Adjust so that peak levels on the level meters stay around −12 dBFS.

\textbf{HINT}

• Lower the input level if the clipping indicator lights because the sound could become distorted.

• Press \textbf{\textcircled{9}} to clear the clipping indicator.
Setting low-frequency cutoff filter

This function can reduce noise, including air-conditioning, wind and vocal pops.

1. Press \[ \text{MENU} \].

This opens the Menu Screen.

2. Use \[ \text{\textless} \] and \[ \text{\textgreater} \] to select “Input/Output”, and press \[ \text{ENTER} \].

3. Use \[ \text{\textless} \] and \[ \text{\textgreater} \] to select “Lo Cut”, and press \[ \text{ENTER} \].
4. Use ‹ and › to set the cutoff frequency.

HINT
• This can be set from 10 to 240 Hz or Off.
Setting the limiter

The limiter can prevent distortion by reducing input signals that have excessively high levels. When the limiter is ON, if the input signal level exceeds the set threshold value, the input signal level will be suppressed to prevent the sound from distorting.

The amount of time after the input signal exceeds the threshold until compression of the output signal is maximized is called the “attack time”. The amount of time after the input signal goes below the threshold until the limiter stops compressing the signal is called the “release time”. Change these two to adjust the audio quality.

1. Press ．

This opens the Menu Screen.

2. Use  and  to select “Input/Output”, and press ．
3. Use ◀ and ▶ to select “Limiter”, and press ENTER.

![Input/Output menu]

Turning the limiter on

4. Use ◀ and ▶ to select "On/Off", and press ENTER.

![Limiter menu]

5. Use ◀ and ▶ to select "On", and press ENTER.

![On/Off menu]

HINT

• The ratio of compression used on the input signal is 20:1.
Setting the threshold
The threshold for limiter operation can be set.

4. Use and to select "Threshold", and press .

5. Use and to set the threshold.

HINT
• This can be set from −16 to −2 dBFS.
Setting the attack time
This sets the amount of time after the input signal exceeds the threshold until compression of the post-limiter signal is maximized.

4. Use and to select “Attack Time”, and press .

5. Use and to set the attack time.

HINT
• This can be set from 1 to 4 ms.

Setting the release time
This sets the amount of time until compression of the post-limiter signal stops after the input signal goes below the threshold.

5. Use ← and → to set the release time.

Hint
• This can be set from 1 to 500 ms.
Setting file names

This sets the file name used for recorded files.

1. Press (MENU).

   This opens the Menu Screen.

2. Use ( and ( to select "Rec Settings", and press (ENTER).

3. Use ( and ( to select "Rec File Name", and press (ENTER).
4. Use \& and \# to select the file name format, and press ENTER.

The following file name formats can be used.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto (Date)</td>
<td>Files are named with a &quot;date_number&quot; format.</td>
</tr>
<tr>
<td></td>
<td>The “Date Format” setting will be used for the date ( → Setting the date format on page 97).</td>
</tr>
<tr>
<td></td>
<td>Example: YYMMD_001.WAV – YYMMD_999.WAV</td>
</tr>
<tr>
<td>User Defined</td>
<td>Files are named with a &quot;user input text string_number&quot; format.</td>
</tr>
<tr>
<td></td>
<td>Example: ZOOM_001.WAV – ZOOM_999.WAV</td>
</tr>
</tbody>
</table>

5. If "User Defined" was selected, input the text string to use for file names (→ Inputting characters on page 87).

HINT

• If no character string is input, file names will be numbers only.

NOTE

• You cannot put a space at the beginning of a character string.
Enabling the sound marker function

Half-second tone signals (sound markers) can be output from the PHONE OUT and LINE OUT jacks when recording is started. Since sound markers are also written to recorded files, when recording audio for video with the H3-VR, adding tone signals to the camera audio can make synchronizing audio and video easier.

1. Press [MENU].

This opens the Menu Screen.

2. Use ◀ and ▶ to select "Rec Settings", and press [ENTER].

3. Use ◀ and ▶ to select "Sound Marker", and press [ENTER].
4. Use ◀ and ▶ to select "On", and press ▶

![Sound Marker]

- Off
- On

NOTE
- Be careful with the volume if you are monitoring the input sound with headphones, for example.
Setting the recording time display

During recording, either the elapsed recording time or the remaining possible recording time can be shown.

1. Press \( \text{MENU} \).

   This opens the Menu Screen.

2. Use \( \text{\quad} \) and \( \text{\quad} \) to select "System", and press \( \text{\quad} \).

3. Use \( \text{\quad} \) and \( \text{\quad} \) to select "Time Display", and press \( \text{\quad} \).
4. Use << and >> to select "Recording", and press ENTER.

5. Use << and >> to select “Elapsed Time” or “Remaining Time”, and press ENTER.
Recording

1. Press 📡 when the Home Screen is open.

The recording file name is shown and recording starts.

![Recording file name](image)

The following operation is possible during recording.

<table>
<thead>
<tr>
<th>Function</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pause/resume</td>
<td>Press 🚪</td>
</tr>
</tbody>
</table>

**NOTE**

- Marks are added at points where recording is paused. Marks are used as cue points. During playback, press 🔄 or 🔄 to move to a mark position.
- Up to 99 marks can be added to a single recording file.
- Marks can be deleted from the mark list (→ “Deleting marks” on page 72).
- If the file size exceeds 2GB during recording, a new file will be created automatically and recording will continue without pause.

1. Press 📡.

This ends recording.

**HINT**

- Even if the power is interrupted or another problem occurs during recording, playing the recorded file with the H3-VR (→ “Playing recordings” on page 52) should repair it to a valid recording file.
Playback

The H3-VR has three playback modes: tracking, manual and binaural. The appearance of the display depends on the playback mode.

Playing recordings

1. Press 🎧 when the Home Screen is open.
   This opens the Playback Screen and starts playback.

2. Press 🎧.
   This ends playback.

HINT

- Use ⤗ to adjust the volume.
- If there is no file that can be played back, a “No File!” message will appear.
Changing the playback mode

How audio is extracted from audio files recorded in Ambisonics A and Ambisonics B (FuMa and AmbiX) formats and how it is processed can be changed.

1. Press 🎧 during playback

Press repeatedly until the desired playback mode is selected.

- **Tracking playback mode**
  By changing the orientation of the H3-VR, sound from specific directions can be extracted and played.

- **Time display**
  This shows either the current elapsed playback time or the remaining playback time (→ "Setting the playback time display" on page 58).

- **Status icon**
  This shows the playback status.
  - 🎧 Playing
  - 🔌 Searching backward
  - 🔍 Moving to previous file
  - ⏯️ Playback paused
  - 🔦 Searching forward
  - 🔍 Moving to the next file

- **Orientation of sound extracted**
  This shows the current orientation setting for sound extraction.

- **Playback mode**
  This shows the current playback mode setting.
5 Horizontal angle
This shows the horizontal angle of the extracted sound orientation.

6 Vertical angle
This shows the vertical angle of the extracted sound orientation.

7 Roll angle
This shows the roll angle (rotation) of the extracted sound orientation.

HINT
• The H3-VR detects changes in angles based on its orientation when playback started. We recommend placing the H3-VR on a flat surface, for example, before starting playback.

The following operations are possible during playback in tracking playback mode.

<table>
<thead>
<tr>
<th>Function</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pause/resume</td>
<td>Press Enter</td>
</tr>
<tr>
<td>Search forward</td>
<td>Press and hold</td>
</tr>
<tr>
<td>Search backward</td>
<td>Press and hold</td>
</tr>
<tr>
<td>Move to the previous mark (if one exists)</td>
<td>Press ↑</td>
</tr>
<tr>
<td>Move to the beginning of the file (if no mark exists)</td>
<td>Press ←</td>
</tr>
<tr>
<td>Move to the next mark (if one exists)</td>
<td>Press ▶</td>
</tr>
<tr>
<td>Play the next file (if no mark exists)</td>
<td>Press ▶ twice</td>
</tr>
<tr>
<td>Play the previous file</td>
<td>Press ← twice</td>
</tr>
</tbody>
</table>

HINT
• The longer you press and hold ◀/▶, the faster the backward/forward search speed becomes.
• If the selected file is not valid, an “Invalid File!” message will appear.
Manual playback mode

By using the arrows to specify the horizontal angle and the arrows to specify the vertical angle, sound from a specific direction can be extracted in stereo and played back.

1 Time display
This shows either the current elapsed playback time or the remaining playback time (→ "Setting the playback time display" on page 58).

2 Status icon
This shows the playback status.
   ✪ Playing  ✋ Playback paused

3 Orientation of sound extracted
This shows the current orientation set for sound extraction.

4 Playback mode
This shows the current playback mode setting.

5 Horizontal angle
This shows the horizontal angle of the extracted sound orientation.

6 Vertical angle
This shows the vertical angle of the extracted sound orientation.

The following operations are possible during playback in manual playback mode.

<table>
<thead>
<tr>
<th>Function</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pause/resume</td>
<td>Press ✪</td>
</tr>
<tr>
<td>Change horizontal angle</td>
<td>Press ←</td>
</tr>
<tr>
<td>Change vertical angle</td>
<td>Press ↓</td>
</tr>
</tbody>
</table>

HINT
• The horizontal and vertical angles can be adjusted in 0–360° ranges.
Binaural playback mode

The sound can be converted to binaural and played back.

① Time display
This shows either the current elapsed playback time or the remaining playback time (→ "Setting the playback time display" on page 58).

② Status icon
This shows the playback status.

• Playing
• Searching backward
• Moving to previous file

• Playback paused
• Searching forward
• Moving to the next file

③ Playback mode
This shows the current playback mode setting.

NOTE
• Binaural mode playback is not possible with files recorded in "96k/16bit" or "96k/24bit" format.
• Files recorded in binaural mode will be played back without processing.
The following operations are possible during playback in binaural playback mode.

<table>
<thead>
<tr>
<th>Function</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pause/resume</td>
<td>Press</td>
</tr>
<tr>
<td>Search forward</td>
<td>Press and hold</td>
</tr>
<tr>
<td>Search backward</td>
<td>Press and hold</td>
</tr>
<tr>
<td>Move to the previous mark (if one exists)</td>
<td>Press</td>
</tr>
<tr>
<td>Move to the beginning of the file (if no mark exists)</td>
<td>Press</td>
</tr>
<tr>
<td>Move to the next mark (if one exists)</td>
<td>Press</td>
</tr>
<tr>
<td>Play the next file (if no mark exists)</td>
<td>Press twice</td>
</tr>
<tr>
<td>Play the previous file</td>
<td>Press twice</td>
</tr>
</tbody>
</table>

**HINT**

- The longer you press and hold  , the faster the backward/forward search speed becomes.
- If the selected file is not valid, an "Invalid File!" message will appear.
Setting the playback time display

During playback, either the elapsed playback time or the remaining playback time can be shown.

1. Press \( \text{MENU} \).

   This opens the Menu Screen.

2. Use \( \leftarrow \) and \( \rightarrow \) to select "System", and press \( \text{ENTER} \).

3. Use \( \leftarrow \) and \( \rightarrow \) to select "Time Display", and press \( \text{ENTER} \).
4. Use ◀ and ▶ to select "Playing", and press ENTER.

5. Use ◀ and ▶ to select “Elapsed Time” or “Remaining Time”, and press ENTER.
Managing folders and files

Creating folders

Folders for saving recorded files can be created.

1. Press \[\text{MENU}\].

   This opens the Menu Screen.

2. Use \[\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\] and \[\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\] to select "Finder", and press \[\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\].

3. Use \[\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\] and \[\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\] to select "New Folder", and press \[\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\text{\begin{tabular}{c}
\text{\small \textbf{\textarrow{1}}}
\end{tabular}}\].
4. Input the folder name (→ “Inputting characters” on page 87).

<table>
<thead>
<tr>
<th>New Folder</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>ABCDEFGHIJ</td>
</tr>
<tr>
<td>KLMNOPQRST</td>
</tr>
<tr>
<td>UVWXYZ_</td>
</tr>
<tr>
<td>abc Del ↑ +[Enter]</td>
</tr>
</tbody>
</table>

A new folder will be created.
Selecting folders and files

1. Press Menu.

This opens the Menu Screen.

2. Use arrows to select "Finder", and press Enter.

3. Use arrows to select a folder or file.
The following operations are possible when using the Finder.

<table>
<thead>
<tr>
<th>Function</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Move down a level</td>
<td>Press Enter when a folder is selected</td>
</tr>
<tr>
<td>Move up a level</td>
<td>Press MENU</td>
</tr>
<tr>
<td>Show options</td>
<td>Press and hold Enter</td>
</tr>
<tr>
<td>Play a file</td>
<td>Press Enter when a file is selected</td>
</tr>
</tbody>
</table>

**NOTE**
- Check marks will appear on the file currently being played, the destination folder for recorded files and the folder where the file currently being played is saved.

**HINT**
- Playback operations are the same as usual when a file is played back from the Finder (→ "Playback" on page 52).

4. Press and hold Enter.

5. Use ◀ and ▶ to select "Select", and press Enter.

6. Use ◀ and ▶ to select "Execute", and press Enter.

This selects the file or folder and opens the Home Screen.
HINT

• If an SD card or folder is selected, the first file inside it will be selected.
• “Select” shown inside an SD card or folder can be used to select that card or folder itself.
Changing folder and file names

1. Press [MENU].

   This opens the Menu Screen.

2. Use [←] and [→] to select "Finder", and press [ENTER].

3. Use [←] and [→] to select the folder or file to change, and press and hold [SELECT].
4. Use ◀ and ► to select “Rename”, and press ENTER.

5. Change the folder or file name (→ “Inputting characters” on page 87).

**NOTE**

- You cannot put a space at the beginning of a folder or file name.
- Folder and file names cannot be changed if they use characters other than ordinary (halfwidth) English letters and numbers.
- If a “File Number Reset!” message appears, the number used for recorded files has been reset.
Checking file information

1. Press 🎧. This opens the Menu Screen.

2. Use < and > to select "Finder", and press 🎧.

3. Use < and > to select the file to check, and press and hold 🎧.
4. Use ◀ and ▶ to select "Information", and press ENTER.

5. Use ◀ and ▶ to check the file information.

The following file information can be checked.

<table>
<thead>
<tr>
<th>Item</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date/time</td>
<td>Date and time recorded</td>
</tr>
<tr>
<td>Format</td>
<td>Recording format</td>
</tr>
<tr>
<td>Format</td>
<td>Recording mode and mic position</td>
</tr>
<tr>
<td>Size</td>
<td>Recording file size</td>
</tr>
<tr>
<td>Time</td>
<td>Recording time</td>
</tr>
</tbody>
</table>

NOTE

• The mic position will not be shown if the recording mode is "Binaural".
Checking file marks

You can view a list of the marks in a recording file. You can also start playback from the position of a selected mark.

1. Press the Menu button (MENU).

This opens the Menu Screen.

2. Use the < and > buttons to select "Finder", and press the Enter button (ENTER).

3. Use the < and > buttons to select the file, and press and hold the Play/Pause button (II HOLD:OPTION).
4. Use ⇓ and → to select "Mark List", and press [ENTER].

The marks are shown in a list.

5. To start playback from a specific mark, use ⇓ and → to select that mark, and press [ENTER].

Mark added when paused during recording
Mark added when skipping occurred during recording

6. Use ⇓ and → to select "Select", and press [ENTER].
7. Use ◄ and ► to select "Execute", and press ENTER.

![Select Menu]

The Home Screen will reopen, and playback will start from the position of the selected mark.
Deleting marks

1. In the mark list, use \( \Rightarrow \) and \( \Rightarrow \) to select a mark, and press \( \text{ENTER} \).

   ![](mark_list.png)

2. Use \( \Rightarrow \) and \( \Rightarrow \) to select "Delete", and press \( \text{ENTER} \).

   ![](delete.png)

3. Use \( \Rightarrow \) and \( \Rightarrow \) to select "Execute", and press \( \text{ENTER} \).

   ![](execute.png)

The selected mark will be deleted.
Deleting folders and files

1. Press \( \text{Menu} \). This opens the Menu Screen.

2. Use \( \leftarrow \) and \( \rightarrow \) to select "Finder", and press \( \text{Enter} \).

3. Press and hold \( \text{Enter} \).
4. Use ‹ and › to select "Delete", and press ENTER.

5. Use ‹ and › to select a file or folder to delete, and press ENTER.

A check mark appears on the selected file or folder.

HINT

- To delete multiple files and folders, repeat step 5.

- By selecting "Select All" at the bottom of the list in step 5 and pressing ENTER, you can select/deselect all files and folders at once.

- Press ← to cancel deletion of files and folders.

6. Press and hold ENTER.

7. Use ‹ and › to select "Execute", and press ENTER.

This deletes the selected files and folders.
Adjusting connected equipment levels (playing test tones)

The line output level can be adjusted. Test tones can be played in order to adjust the level for a digital SLR camera or other device.

1. Minimize the input gain of the other device.

2. Use an audio cable to connect the external mic jack of the other device with the LINE OUT jack of the **H3-VR**.

3. Press 🔙.

   ![Menu Screen]

   This opens the Menu Screen.

4. Use 🔹 and ▼ to select "Input/Output", and press 🔠.

5. Use 🔹 and ▼ to select "Line Out Level", and press 🔠.

   ![Input/Output Menu]
6. Use † and ‡ to select "Set (with Tone)", and press ENTER.

This starts output of the test tone.
No test tone will be output if “Set” is selected.

7. Use † and ‡ to adjust the line output level.
While checking the audio level meter of the other device, adjust the audio signal level so that it never exceeds −6 dB.

HINT
• This can be set from -40 to 0 dB.

8. Adjust the input gain of the other device.
While checking the audio level meter of the connected device, make adjustments to the input gain of that device until the audio signal level is about −6 dB.

This stops test tone output.

NOTE
• See the operation manual of the connected device being used for information about its operation.
• If the automatic gain control function on the other device is on, turn it off.
• The test tone is output from both the LINE OUT and PHONE OUT jacks.
• Be careful with the volume if you are monitoring the sound with headphones, for example.

HINT
• The test tone is a 1kHz sine wave at -6 dBFS.
Using USB functions

Using as a card reader

Use a computer to check the files saved on the microSD card and copy those files to the computer.

Connecting to a computer

1. Press \( \text{MENU} \).

This opens the Menu Screen.

2. Use \( \text{UP} \) and \( \text{DOWN} \) to select "USB", and press \( \text{ENTER} \).
3. Use and to select "Card Reader", and press.

4. Use a USB cable to connect the H3-VR and the computer.
Disconnecting from a computer

1. Disconnect on the computer.
   On Windows, select **H3-VR** from "Safely Remove Hardware".
   On Mac operating systems, drag the **H3-VR** icon to the Trash and drop it.

   **NOTE**
   • Always conduct computer disconnection procedures before removing the USB cable.

2. Press 🌈.

   ![Image of a device with buttons](image)

   This opens the Menu Screen.

3. Use 🔮 and 🔄 to select "Exit", and press 📈.

   ![Card Reader Menu](image)

   This ends card reader operation and reopens the Home Screen.

4. Disconnect the USB cable from the **H3-VR** and the computer.
Using as an audio interface

Sounds being recorded by the **H3-VR** can be input to a computer or iOS device, and playback signals on a computer or iOS device can be output from the **H3-VR**.

**Connecting to a computer or iOS device.**

1. Press the Menu button.

   ![Menu Screen](image)

   This opens the Menu Screen.

2. Use the arrow buttons to select "USB", and press Enter.

   ![USB Menu](image)

3. Use the arrow buttons to select "Audio I/F", and press Enter.

   ![Audio I/F Menu](image)
4. Use ▲ and ▼ to select the mode and type of connected device, and press ▶.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo</td>
<td>Input signals 1–4 are sent as a stereo mix in this 2-in/2-out connection mode for Windows/Mac. The bus power of the connected device will be used.</td>
</tr>
<tr>
<td>4ch Ambisonics</td>
<td>Input signals 1–4 are sent as converted tracks 1–4 in this 4-in/2-out connection mode for Windows/Mac. To use with Windows, download the driver from the ZOOM website (<a href="http://www.zoom.co.jp">www.zoom.co.jp</a>). The bus power of the connected device will be used.</td>
</tr>
<tr>
<td>Stereo (iOS)</td>
<td>Input signals 1–4 are sent as a stereo mix in this 2-in/2-out connection mode for iOS devices. The H3-VR use its batteries for power.</td>
</tr>
</tbody>
</table>

5. Use a USB cable to connect the H3-VR and the other device.

NOTE
- A Lightning to USB Camera Adapter is necessary to connect an iOS device.
- After selecting “Stereo (iOS)” in step 4, follow the instructions on the display and disconnect the cable once. Then, select “Stereo (iOS)” again and reconnect the cable.
Disconnecting from a computer or iOS device

1. Press \textit{MENU}.

This opens the Menu Screen.

2. Use \textit{\textless} and \textit{\textgreater} to select "Exit", and press \textit{ENTER}.

3. Use \textit{\textless} and \textit{\textgreater} to select "Execute", and press \textit{ENTER}.

This ends audio interface operation and reopens the Home Screen.

4. Disconnect the USB cable from the \textbf{H3-VR} and the other device.
Audio interface settings

The following settings can be made when using the H3-VR as an audio interface.

Enabling direct monitoring

This directly outputs the sound being recorded by the H3-VR from it before sending it to the computer or iOS device. This enables monitoring without latency.

1. When connected as an audio interface, press \( \text{MENU} \).

   ![Menu Screen]

   This opens the Menu Screen.

2. Use \( \text{HOME} \) and \( \text{ENTER} \) to select “Direct Monitor”, and press \( \text{ENTER} \).

   ![Direct Monitor Menu]

3. Use \( \text{HOME} \) and \( \text{ENTER} \) to select "On", and press \( \text{ENTER} \).

   ![Direct Monitor Setting]

   This turns direct monitoring on.
Enabling the loop back function

This function mixes the playback sound from the computer or iOS device with the **H3-VR** input and sends the mix back to the computer or iOS device (loop back). You can use this function to add narration to music played back from the computer or iOS device and record the mix or stream it using software, for example.

**NOTE**
- This function cannot be used when the audio interface mode is "4ch Ambisonics".

1. When connected as an audio interface, press 

   ![Menu Screen]

   This opens the Menu Screen.

2. Use 
   and 
   to select “Loop Back”, and press 

   ![Menu Screen]

3. Use 
   and 
   to select "On", and press 

   ![Menu Screen]

   This turns the loop back function on.
Pairing with an iOS device

By connecting a BTA-1 or other dedicated wireless adapter and using the dedicated controller app, the H3-VR can be operated from an iOS device.

**NOTE**
- The dedicated app must be installed on the iOS device beforehand.
  The dedicated app can be downloaded from the App Store.
- See the manual for the app for procedures to set and operate it.

1. Remove the REMOTE connector cover and connect a BTA-1 or other dedicated wireless adapter.

   A password that is used to identify the BTA-1 or other dedicated wireless adapter will be shown.

2. Launch the dedicated app on the iOS device, and enter the password shown on the H3-VR display.

   This starts pairing.

   When pairing completes, “Connected” will appear on the H3-VR display.

**HINT**
- Entering a password will not be necessary when launching the app again in the future.
- Use the H3-VR and the iOS device as close together as possible to make communication more reliable.
Disconnecting from an iOS device

Disconnecting the H3-VR and iOS device disables operation of the H3-VR from the iOS device.

1. Press \( \text{MENU} \).

This opens the BTA-1 screen.

2. Use \( \text{ } \) and \( \text{ } \) to select "Off", and press \( \text{ENTER} \).

HINT

• After disconnecting, to control the H3-VR with the iOS device again, select "BTA-1" from the Menu.
Inputting characters

A character input screen will open when you select a function that allows character input, including setting and changing file names.

The following operations are possible on character input screens.

<table>
<thead>
<tr>
<th>Function</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Select characters</td>
<td>Use (\uparrow) and (\downarrow).</td>
</tr>
<tr>
<td>Confirm characters</td>
<td>Press (\text{ENTER}).</td>
</tr>
<tr>
<td>Change character type</td>
<td>Use (\uparrow) and (\downarrow) to select ”abc”, ”#+=” or ”ABC”, and press (\text{ENTER}).</td>
</tr>
<tr>
<td></td>
<td>• When ”abc” is selected, lowercase English letters can be input.</td>
</tr>
<tr>
<td></td>
<td>• When ”#+=” is selected, numbers and symbols can be input.</td>
</tr>
<tr>
<td></td>
<td>• When ”abc” is selected, uppercase English letters can be input.</td>
</tr>
<tr>
<td>Move the character input field</td>
<td>Use (\uparrow) and (\downarrow) to select “←&quot; or “→&quot;, and press (\text{ENTER}).</td>
</tr>
<tr>
<td>cursor</td>
<td></td>
</tr>
<tr>
<td>Delete input characters</td>
<td>Use (\uparrow) and (\downarrow) to select “Del“, and press (\text{ENTER}).</td>
</tr>
<tr>
<td>End character input</td>
<td>Use (\uparrow) and (\downarrow) to select “Enter“, and press (\text{ENTER}).</td>
</tr>
<tr>
<td>Cancel character input</td>
<td>Press (\text{MENU}).</td>
</tr>
</tbody>
</table>
Setting the type of batteries used

Set the type of battery used by the H3-VR to alkaline, Ni-MH or lithium so that the amount of remaining battery charge can be accurately displayed.

1. Press Í.

This opens the Menu Screen.

2. Use ◀ and ▶ to select "System", and press ENTER.

3. Use ◀ and ▶ to select "Battery", and press ENTER.

ALKALINE
4. Use † and ‡ to select the battery type, and press ENTER.

This sets the battery type.
Setting the display backlight

Set the time after the last operation until the display backlight turns off to conserve energy.

1. Press \textbullet\textup{MENU}. This opens the Menu Screen.

2. Use \textbullet\textup{ARROW} and \textbullet\textup{ARROW} to select "System", and press \textbullet\textup{ENTER}.

3. Use \textbullet\textup{ARROW} and \textbullet\textup{ARROW} to select "LCD", and press \textbullet\textup{ENTER}. 

This opens the Menu Screen.
4. Use \( \leftarrow \) and \( \rightarrow \) to select "Backlight", and press \( \text{ENTER} \).

5. Use \( \leftarrow \) and \( \rightarrow \) to set the amount of time until the backlight turns off, and press \( \text{ENTER} \).

The following times to turn off the backlight can be set.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>The backlight always stays off.</td>
</tr>
<tr>
<td>On</td>
<td>The backlight always stays on.</td>
</tr>
<tr>
<td>30 sec</td>
<td>The backlight turns off if no operation occurs for the set amount of time.</td>
</tr>
<tr>
<td>1 min</td>
<td></td>
</tr>
<tr>
<td>2 min</td>
<td></td>
</tr>
<tr>
<td>3 min</td>
<td></td>
</tr>
<tr>
<td>4 min</td>
<td></td>
</tr>
<tr>
<td>5 min</td>
<td></td>
</tr>
</tbody>
</table>
Adjusting the display contrast

The contrast (display brightness level differences) can be set.

1. Press \[\text{MENU}\].

This opens the Menu Screen.

2. Use \[\text{ \leftarrow} \] and \[\text{ \rightarrow} \] to select "System", and press \[\text{ENTER}\].

3. Use \[\text{ \leftarrow} \] and \[\text{ \rightarrow} \] to select "LCD", and press \[\text{ENTER}\].
4. Use \( \text{\textless} \) and \( \text{\textgreater} \) to select "Contrast", and press \( \text{ENTER} \).

5. Use \( \text{\textless} \) and \( \text{\textgreater} \) to set the display contrast.

This sets the contrast.

**HINT**

- This can be set from 1 to 10.
Setting the language shown

1. Press \( \text{MENU} \).

   This opens the Menu Screen.

2. Use \( \text{Cursor Left} \) and \( \text{Cursor Right} \) to select "Language", and press \( \text{ENTER} \).

3. Use \( \text{Cursor Left} \) and \( \text{Cursor Right} \) to select the display language, and press \( \text{ENTER} \).

   This completes setting the language.

**HINT**

- The first time you turn the power on after purchase, this screen opens automatically.
Setting the date and time

Set the date and time added to recording files.

1. Press \[ \text{MENU} \].

This opens the Menu Screen.

2. Use \[ \text{Next} \] and \[ \text{Previous} \] to select "System", and press \[ \text{Enter} \].

3. Use \[ \text{Next} \] and \[ \text{Previous} \] to select "Date/Time", and press \[ \text{Enter} \].
Setting the date and time

4. Use << and >> to select "Set Date/Time", and press ENTER.

5. Use << and >> to select the item to change, and press ENTER.

HINT
- The first time you turn the power on after purchase, this screen opens automatically after you set the language used.

6. Use << and >> to change the value of the selected item, and press ENTER.
7. Use ‹ and › to select “OK”, and press ENTER. This completes setting the date and time.

**Setting the date format**
The date format can be changed. This is used when adding dates to file names and when showing the date on the display.

4. Use ‹ and › to select "Date Format", and press ENTER.

5. Use ‹ and › to select the date format, and press ENTER.

The following date formats can be used.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>YYMMDD</td>
<td>Year, month, day order</td>
</tr>
<tr>
<td>MMDDYY</td>
<td>Month, day, year order</td>
</tr>
<tr>
<td>DDMMYY</td>
<td>Day, month, year order</td>
</tr>
</tbody>
</table>
Formatting microSD cards

Format microSD cards to use them with the H3-VR.

1. Press (MENU).

This opens the Menu Screen.

2. Use (◄) and (►) to select "System", and press (ENTER).

3. Use (◄) and (►) to select "SD Card", and press (ENTER).
4. Use "<" and ">" to select "Format", and press "ENTER".

5. Use "<" and ">" to select "Execute", and press "ENTER".

This formats the microSD card for use with the H3-VR.

**NOTE**
- After purchasing a new microSD card, always format it using the H3-VR to maximize performance.
- Be aware that all data previously saved on a microSD card will be deleted when it is formatted.
Testing microSD card performance

You can test whether a microSD card can be used with the **H3-VR**.

**NOTE**
- Even if a performance test result is "Pass", there is no guarantee that writing errors will not occur.

## Conducting a quick test

You can quickly test whether a microSD card can be used with the **H3-VR**.

### 1. Press \[ \text{MENU} \].

This opens the Menu Screen.

### 2. Use \[ \text{←} \] and \[ \text{→} \] to select "System", and press \[ \text{ENTER} \].
3. Use \[\text{and }\] to select "SD Card", and press \[\text{Enter}\].

4. Use \[\text{and }\] to select “Test”, and press \[\text{Enter}\].

5. Use \[\text{and }\] to select “Quick Test”, and press \[\text{Enter}\].

6. Use \[\text{and }\] to select "Execute", and press \[\text{Enter}\].

This starts a quick test of the microSD card.
HINT

• The Quick Test should take about 30 seconds.
• Press to cancel a quick test.

7. Check the result when the test completes.
Conducting a full test

You can test whether a microSD card can be used with the **H3-VR** by examining the entire card.

**NOTE**
- Use the AC adapter to supply power when conducting a full test (→ “Using an AC adapter” on page 19).

1. Press \( \text{MENU} \).

This opens the Menu Screen.

2. Use \( \text{\textless} \) and \( \text{\textgreater} \) to select “System”, and press \( \text{ENTER} \).

3. Use \( \text{\textless} \) and \( \text{\textgreater} \) to select “SD Card”, and press \( \text{ENTER} \).
4. Use \( \downarrow \) and \( \uparrow \) to select “Test”, and press \( \) Enter \( \).

5. Use \( \downarrow \) and \( \uparrow \) to select “Full Test”, and press \( \) Enter \( \).

After the amount of time required for the full test is shown briefly, the execution screen will open.

6. Use \( \downarrow \) and \( \uparrow \) to select "Execute", and press \( \) Enter \( \).

This starts a full test of the microSD card.

HINT

* You can press \( \) Enter \( \) to pause and resume the full test.
7. Check the result when the test completes.
Restoring default settings (Factory Reset)

1. Press (MENU).

This opens the Menu Screen.

2. Use (←) and (→) to select "System", and press (ENTER).

3. Use (←) and (→) to select “Factory Reset”, and press (ENTER).
4. Use ► and ◄ to select "Execute", and press ENTER.

This starts resetting the **H3-VR**.

After the settings are reset, the power will automatically turn off.
Checking the firmware versions

1. Press \[\text{MENU}\].

This opens the Menu Screen.

2. Use \[\text{SEL}\] and \[\text{SET}\] to select "System", and press \[\text{ENTER}\].

3. Use \[\text{SEL}\] and \[\text{SET}\] to select "Versions", and press \[\text{ENTER}\].
4. Check the firmware versions.
Updating the firmware

1. Install new batteries in the **H3-VR** or connect an AC adapter.

2. Copy the firmware update file to the root directory on a microSD card.

   **NOTE**
   - Files for the latest firmware updates can be downloaded from the ZOOM website (www.zoom.co.jp).

3. Insert the microSD card into the **H3-VR**.

4. While pressing **ENTER**, turn the power on.

   ![Image of H3-VR with power button highlighted]

5. Use **△** and **▼** to select “Update”, and press **ENTER**.

   ![Image of firmware update screen]

   This starts the firmware update.

   **NOTE**
   - During the firmware update, do not turn the power off or remove the microSD card. Doing so could cause the **H3-VR** to become unstartable.
   - In the unlikely event that a firmware update should fail, conduct the procedures from the beginning to update the firmware again.
6. After the firmware update completes, turn the power off.
Responding to Alert Messages

If one of the messages below appears, follow the instructions to respond to it.

### Alert messages that appear during startup

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation and response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date/Time Reset</td>
<td>The date and time setting was initialized. Reset the time ( → “Setting the date and time” on page 95).</td>
</tr>
</tbody>
</table>

### Alert messages that appear when using batteries

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation and response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Battery!</td>
<td>The remaining battery charge has become low. Replace the batteries with new ones or connect the AC adapter.</td>
</tr>
<tr>
<td>No Battery Charge!</td>
<td>When the battery charge becomes low, this appears before the power turns off automatically. Replace the batteries with new ones or connect the AC adapter.</td>
</tr>
</tbody>
</table>

### Alert messages that appear when the Recording Screen is open

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation and response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannot Create File!</td>
<td>The maximum number (500) of folders and files that can be created on the same level of the microSD card has been reached. Delete unneeded folders and files or record to a different location.</td>
</tr>
<tr>
<td>Card Full!</td>
<td>The microSD has become full. Delete unneeded data or replace it with a new microSD card.</td>
</tr>
<tr>
<td>File Number Limit Reached!</td>
<td>The file number limit (999) has been reached.</td>
</tr>
<tr>
<td>No SD Card!</td>
<td>No microSD card is loaded. Load a microSD card.</td>
</tr>
<tr>
<td>Mark Limit Reached!</td>
<td>The maximum number of marks (99) in one file has been reached.</td>
</tr>
<tr>
<td>Invalid SD Card!</td>
<td>The SD card is invalid. Formatting the card with the <strong>H3-VR</strong> might make it usable.</td>
</tr>
<tr>
<td>Now Recording!</td>
<td>The power cannot be turned off during recording. Stop recording before turning the power off.</td>
</tr>
<tr>
<td>SD Write Error Mark ❅</td>
<td>A writing error occurred because the writing speed to the microSD card was insufficient. We recommend using a microSDHC/SDXC card that has been confirmed to operate with this recorder. A list of confirmed microSDHC/SDXC cards can be checked on the ZOOM website (<a href="http://www.zoom.co.jp">www.zoom.co.jp</a>).</td>
</tr>
</tbody>
</table>
### Alert messages that appear when the Recording Screen is open

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation and response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invalid File!</td>
<td>The file is not compatible with the H3-VR.</td>
</tr>
<tr>
<td>Cannot play 96kHz format</td>
<td>Binaural playback mode cannot be used with files recorded in &quot;96k/16bit&quot; or &quot;96k/24bit&quot; format.</td>
</tr>
<tr>
<td>No File!</td>
<td>The selected location does not have any files that can be played. Select a location with files or create a new recording.</td>
</tr>
</tbody>
</table>

### Alert messages that appear during file operations

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation and response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannot Create Folder!</td>
<td>The maximum number (500) of folders and files that can be created on the same level of the microSD card has been reached. Delete unneeded folders and files or create a folder in a different location.</td>
</tr>
<tr>
<td>Read Only!</td>
<td>The file is protected so it cannot be deleted. Use a computer to check the status of the file.</td>
</tr>
<tr>
<td>No File Selected!</td>
<td>Select at least one file.</td>
</tr>
<tr>
<td>Folder Name Already Exists!</td>
<td>The folder could not be created because a folder with the same name already exists. Use a different name.</td>
</tr>
<tr>
<td>File Name Already Exists!</td>
<td>The file could not be changed because a file with the same name already exists. Use a different name.</td>
</tr>
<tr>
<td>Input Folder (File) name!</td>
<td>At least one character must be input when changing folder and file names.</td>
</tr>
<tr>
<td>Character Limit Reached!</td>
<td>The maximum number of characters that can be input has been reached.</td>
</tr>
</tbody>
</table>
Troubleshooting

If you think that the **H3-VR** is operating strangely, check the following items first.

**Recording/playback trouble**

<table>
<thead>
<tr>
<th><strong>No sound is output/volume is low</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Confirm that the volume of the <strong>H3-VR</strong> is not set too low.</td>
</tr>
<tr>
<td>• Check the volume of the computer, iOS device or other equipment connected to the <strong>H3-VR</strong>.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Recorded audio cannot be heard or is very quiet</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Confirm that the mic is pointed in the right direction. (→ “Setting the mic position” on page 27).</td>
</tr>
<tr>
<td>• Check the input level settings (→ “Adjusting input levels” on page 37).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Unable to record</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Confirm that the REC LED is lit (→ “Names of parts” on page 13).</td>
</tr>
<tr>
<td>• Check the remaining recordable time on the Home Screen (→ “Home Screen (in recording standby)” on page 26).</td>
</tr>
<tr>
<td>• Confirm that a microSD card is loaded properly in the card slot (→ “Inserting microSD cards” on page 20).</td>
</tr>
<tr>
<td>• If the HOLD function is on, button operations will be disabled. Disable the HOLD function (→ “Preventing misoperation (HOLD function)” on page 23).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Recorded sound does not play back properly</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>If the orientation of the mic during recording is different from the Mic Position setting, proper playback of the different direction signals will not be possible.</td>
</tr>
<tr>
<td>• Use the orientation of the mic during recording that matches the Mic Position setting (→ “Setting the mic position” on page 27).</td>
</tr>
</tbody>
</table>

**Other trouble**

<table>
<thead>
<tr>
<th><strong>Computer does not recognize the <strong>H3-VR</strong> when connected by a USB cable</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Confirm that the operating system of the connected computer is supported on the ZOOM website (<a href="http://www.zoom.co.jp">www.zoom.co.jp</a>).</td>
</tr>
<tr>
<td>• The USB function must be set on the <strong>H3-VR</strong> to allow the computer to recognize it (→ “Using as a card reader” on page 77, “Using as an audio interface” on page 80).</td>
</tr>
</tbody>
</table>
Battery operation time is short
Making the following settings could increase the battery operation time.

• Set the battery type setting to match the batteries being used (→ “Setting the type of batteries used” on page 88).
• Turn off the display backlight (→ “Setting the display backlight” on page 90).
• Reduce the sampling rate used to record files (→ “Setting the recording format” on page 32).
## Metadata list

### Metadata contained in WAV file BEXT chunks

<table>
<thead>
<tr>
<th>Tag</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>zTAKE=</td>
<td>File number</td>
</tr>
<tr>
<td>zSCENE=</td>
<td>Scene name</td>
</tr>
<tr>
<td></td>
<td>Use the following Menu item to set this.</td>
</tr>
<tr>
<td></td>
<td>Menu &gt; Rec Settings &gt; Rec File Name</td>
</tr>
<tr>
<td>zTRK1=</td>
<td>Track names</td>
</tr>
<tr>
<td></td>
<td>FuMa: zTRK1=W, zTRK2=X, zTRK3=Y, zTRK4=Z</td>
</tr>
<tr>
<td>zTRK2=</td>
<td>AmbiX: zTRK1=W, zTRK2=Y, zTRK3=Z, zTRK4=X</td>
</tr>
<tr>
<td>zTRK3=</td>
<td>Ambisonics A: zTRK1=FLU, zTRK2=FRD, zTRK3=BLD, zTRK4=BRU</td>
</tr>
<tr>
<td></td>
<td>Stereo: zTRK1=L, zTRK2=R</td>
</tr>
<tr>
<td>zTRK4=</td>
<td>Binaural: zTRK1=L, zTRK2=R</td>
</tr>
<tr>
<td>zNOTE=</td>
<td>This can be set and edited from an iOS device.</td>
</tr>
<tr>
<td></td>
<td>Menu &gt; Rec Settings &gt; Rec File Note</td>
</tr>
<tr>
<td></td>
<td>Menu &gt; Finder &gt; Options &gt; Note</td>
</tr>
</tbody>
</table>
## Metadata contained in WAV file iXML chunks

<table>
<thead>
<tr>
<th>iXML tag</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>&lt;SCENE&gt;</code></td>
<td>Menu &gt; Rec Settings &gt; Rec File Name &gt; Auto (Date)</td>
</tr>
<tr>
<td></td>
<td>Menu &gt; Rec Settings &gt; Rec File Name &gt; User Defined Name</td>
</tr>
<tr>
<td></td>
<td>Menu &gt; Finder &gt; Options &gt; Rename</td>
</tr>
<tr>
<td><code>&lt;TAKE&gt;</code></td>
<td>Menu &gt; Finder &gt; Options &gt; Rename</td>
</tr>
<tr>
<td><code>&lt;FILE_UID&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;NOTE&gt;</code></td>
<td>This can be set and edited from an iOS device.</td>
</tr>
<tr>
<td></td>
<td>Menu &gt; Rec Settings &gt; Rec File Note</td>
</tr>
<tr>
<td></td>
<td>Menu &gt; Finder &gt; Options &gt; Note</td>
</tr>
<tr>
<td><code>&lt;SPEED&gt;&lt;FILE_SAMPLE_RATE&gt;</code></td>
<td>Menu &gt; Rec Settings &gt; Rec Format</td>
</tr>
<tr>
<td><code>&lt;SPEED&gt;&lt;AUDIO_BIT_DEPTH&gt;</code></td>
<td>Menu &gt; Rec Settings &gt; Rec Format</td>
</tr>
<tr>
<td><code>&lt;SPEED&gt;&lt;DIGITIZER_SAMPLE_RATE&gt;</code></td>
<td>Menu &gt; Rec Settings &gt; Rec Format</td>
</tr>
<tr>
<td><code>&lt;SPEED&gt;&lt;TIMESTAMP_SAMPLES_SINCE_MID-NIGHT_HI&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;SPEED&gt;&lt;TIMESTAMP_SAMPLES_SINCE_MID-NIGHT_LO&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;SPEED&gt;&lt;TIMESTAMP_SAMPLE_RATE&gt;</code></td>
<td>Menu &gt; Rec Settings &gt; Rec Format</td>
</tr>
<tr>
<td><code>&lt;HISTORY&gt;&lt;ORIGINAL_FILENAME&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;FILE_SET&gt;&lt;TOTAL_FILES&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;FILE_SET&gt;&lt;FAMILY_UID&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;FILE_SET&gt;&lt;FILE_SET_INDEX&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;TRACK_LIST&gt;&lt;TRACK_COUNT&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;TRACK_LIST&gt;&lt;TRACK&gt;&lt;CHANNEL_INDEX&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;TRACK_LIST&gt;&lt;TRACK&gt;&lt;INTERLEAVE_INDEX&gt;</code></td>
<td></td>
</tr>
<tr>
<td><code>&lt;TRACK_LIST&gt;&lt;TRACK&gt;&lt;NAME&gt;</code></td>
<td></td>
</tr>
</tbody>
</table>
## Specifications

<table>
<thead>
<tr>
<th>Recording media</th>
<th>Cards compatible with microSD/microSDHC/microSDXC specifications (Class 4 or higher)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recording formats</td>
<td><strong>Ambisonics A, Ambisonics B (FuMa/AmbiX)</strong>&lt;br&gt;WAV 4ch poly (supports BWF and iXML): 44.1 kHz/16-bit, 44.1 kHz/24-bit, 48 kHz/16-bit, 48 kHz/24-bit, 96 kHz/16-bit, 96 kHz/24-bit <strong>Stereo</strong>&lt;br&gt;WAV stereo (supports BWF and iXML): 44.1 kHz/16-bit, 44.1 kHz/24-bit, 48 kHz/16-bit, 48 kHz/24-bit, 96 kHz/16-bit, 96 kHz/24-bit <strong>Binaural</strong>&lt;br&gt;WAV stereo (supports BWF and iXML): 44.1 kHz/16-bit, 44.1 kHz/24-bit, 48 kHz/16-bit, 48 kHz/24-bit</td>
</tr>
<tr>
<td>Display</td>
<td>1.25” monochrome LCD (96×64)</td>
</tr>
<tr>
<td>Motion sensor</td>
<td>6 axes (3-axis gyro, 3-axis acceleration)</td>
</tr>
<tr>
<td>Built-in Ambisonic mic</td>
<td>4 matched unidirectional condenser mics&lt;br&gt;Maximum sound pressure input: 120 dB SPL&lt;br&gt;Mic gain: +18 – +48 dB</td>
</tr>
<tr>
<td>LINE OUT</td>
<td>Connector: 3.5 mm stereo mini&lt;br&gt;Maximum output level: −10 dBu (1 kHz, 10 kΩ load)</td>
</tr>
<tr>
<td>PHONE OUT</td>
<td>Connector: 3.5 mm stereo mini&lt;br&gt;Maximum output level: 20 mW + 20 mW (into 32Ω load)</td>
</tr>
</tbody>
</table>
| USB | Connector: microUSB<br>**Mass storage operation**
USB 2.0 High Speed<br>**Audio interface operation**
2 in/2 out (stereo/binaural input): USB 2.0 Full Speed, 44.1 kHz/16-bit, 48 kHz/16-bit<br>4 in/2 out (Ambisonics A/FuMa/ AmbiX input): USB 2.0 High Speed, 44.1 kHz/24-bit, 48 kHz/24-bit |
| Power | 2 AA batteries (alkaline, lithium, or rechargeable NiMH)<br>AC adapter (ZOOM AD-17): DC 5V/1A (supports USB bus power) |
| Estimated continuous recording time using batteries | 48 kHz/24-bit, FuMa Rec Mode<br>Alkaline batteries: about 11.5 hours<br>NiMH batteries (1900 mAh): about 11.5 hours<br>Lithium batteries: about 24 hours<br>**FR6** (1.5 V) **14500** (3.7 V) cannot be used. They will break the product. |
| External dimensions | 76 mm (W) × 78 mm (D) × 123 mm (H) |
| Weight (main unit only) | 120 g |

• The above values are approximate.
• Continuous battery operation times were determined using in-house testing methods. They will vary greatly according to use conditions.