Audioproduktion @ Home

or From the Office
for Cultural Initiatives and Anyone Else Who Is Interested

radiofabrik

Audioproduction @ home
2022

IMPRESSUM

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Lizenz: CC BY–NC–ND
Namensnennung – Nichtkommerzielle Nutzung – Keine Bearbeitung

Gefördert aus den Mitteln des

LAND SALZBURG

Bundesministerium
Kunst, Kultur,
öffentlicher Dienst und Sport

AUDIOPRODUKTION @ HOME

1. Introduction 4

2. First Steps – Connecting the Recorder 5

3. Recording with One Microphone 6

4. Recording with Two Microphones (Advanced) 8

4.1. Audio Editing for Advanced Users 9

5. Recording External Sources (for Pros) 11

6. TROUBLESHOOTING 13

1. Introduction

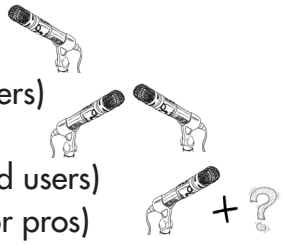
If you've ever tried to **record audio files** for podcasts or radio shows at home, you'll have noticed that not all microphones can just be plugged into any laptop or **computer**.

The signal level of mics without a preamp is too low. This means that the recordings are very quiet. If their volume is then increased in an editing program like Audacity, it adds an unpleasant **noise**.

The **mobile recorders** that Radiofabrik members can borrow from us, allow you to **record** the signals from mics and other devices **directly in Audacity** on your own computer. Like this, the production steps will be similar to the ones necessary in the recording studio.

The **advantage** of this method as opposed to recording directly onto mobile recorders: you can immediately listen to, edit and replay recordings. The extra steps of transferring the files from a mobile recorder to the computer and then importing it into the editing program, are no longer necessary. This saves on time and energy.

In this manual we'll show you **3 ways** of recording directly onto your computer using the Zoom H4n and H4n Pro:



- **Recording with one microphone**
  e.G for radio intros (for beginners)
- **Recording with two mics**
  e.G for Interviews (for advanced users)
- **Recording of external devices** (for pros)

The **first steps** are the same **for all three methods** and will be described in the next chapter.

Please note: Before using this manual, we would advise you to check out our information on mobile recorders, if you haven't already. **To understand this manual it is necessary to already know the basics on mobile recorders** (e.G. information on how to adjust the sound level), that will not be mentioned here. You'll find these basics in our "Digital Recorders" manual.

Basic **knowledge about cutting audio** with the audio editor and recorder **Audacity** are also required.

2. First Steps – Connecting the Recorder

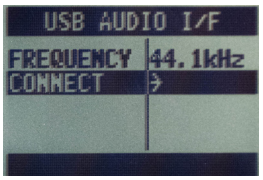
The first few steps are always the same. Here's what you do to connect the audio recorder.

Plug a USB cord into the turned-off **Zoom recorder** and into the **computer**. The Zoom device will switch on automatically.

On the Zoom, you can now select the function "**Audio I/F**" (audio interface) using the menu wheel (on the right side of the device).

Confirm your selection by pressing the wheel.

In the next menu, you need to set the sample rate (frequency) to **44.1 kHz**. When everything is set, confirm by clicking "**Connect**".



The computer will now recognize the Zoom as an interface. The display light will turn on. On the display we'll see the text "USB Audio I/F" and under it, as usual, the sound level.

If this is the first time you're connecting the device to your computer, the computer will install the necessary **drivers**. That can take a few seconds.

If the computer cannot find the device during the next few steps, skip ahead in this manual to chapter 6 – Troubleshooting.
There, we explain what to do in such a case.

44.1kHz is the **standard** setting for all **audio production** (podcasts, radio shows…). If you're recording a text that will be used in a **video**, however, you need to select **48kHz**. If the sample rates differ, voices will be distorted when playing the audio.

3. Recording with One Microphone

Recording with one mic is the production standard. Like this, intros and interviews can be recorded at home.

First, we connect the **mic** to the recorder. Pay attention, which **XLR-jack** you're plugging it into. There are two options: input 1 (on the left) and input 2 (on the right). When you look at the jacks closely, you'll be able to see the numbers 1 or 2.

You can use the two "**Input**" **buttons** to let the recorder know which jack the sound is coming through.

This means:

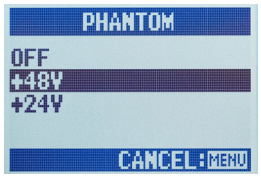
- if the mic is connected to input 1, press the "Input 1" button.
- if the mic is connected to input 2, press "Input 2".

The **active button/Input will emit a red light**.

Phantom power means that the mic is getting electricity from the recorder and does not need extra batteries.

If you are using a microphone that needs separate electricity/batteries, make sure that **phantom power** is switched on. This is the case with the mics that come with our recorders.

To switch on phantom power, press the "**Menu**" **button**, then turn the menu wheel to scroll to the "**Phantom"** item on the list and select it by pressing the menu wheel. Then select **+48V**.



Now, when you speak into the mic, you can see a change in the **sound level** on the display.

If there is **no discernible sound level** to be seen, check the following things: Is the mic turned on? Is it connected to the correct jack/is the recorder set to the correct input? Is the phantom power switched on?

If you want to listen to the recording with **headphones** while it's happening, go to the Zoom menu and **activate monitoring**.

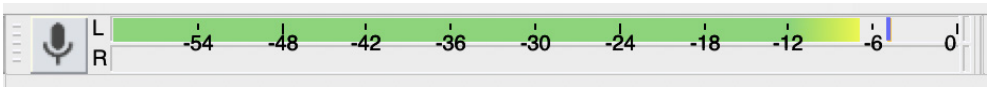
To do this, press the "**Menu**" **button** on the upper right of the device, select

"**Monitor**" using the menu wheel and select "**ON**". Now you can plug your headphones into the Zoom and listen while recording.

Now start **Audacity**. Select the **Zoom** as both the **recording device** and also the **playback device**.

Set the **recording volume** (level) on the Zoom as usual and double check in Audacity whether the sound is coming in loud enough.

The **ideal recording volume** lies between -6dB and -12dB.



From the moment you press the "**Record**" **button** in Audacity, everything you say into the mic will be recorded.

4. Recording with Two Microphones (Advanced)

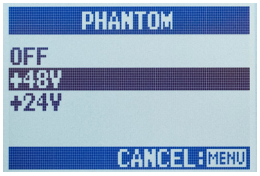
Recording with two mics is less common. An example where it can be used is when two people are co-hosting a show.

Follow all the steps from chapter 2 "First Steps – Connecting the Recorder".

Attention: The recorders that you can borrow from us only come with one mic. If you need a second one, you need to clarify that when making your reservation!

Then plug both **mics** into the Zoom recorder. Afterwards press both "Input" buttons on the device (1&2).
Both buttons should be glowing red now.

If you are using a microphone that needs separate electricity/batteries, make sure that the **phantom power** is switched on. This is the case with the mics that come with our recorders.



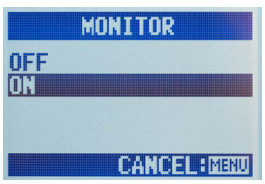
To switch on phantom power, press the "**Menu**" **button**, then turn the menu wheel to scroll to the "**Phantom**" item on the list and select it by pressing the menu wheel. Then select **+48V**.

Now, when you speak into the mic, you can see a change in the **sound level** on the display.

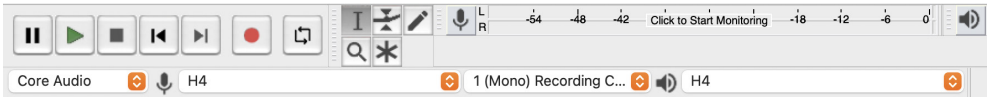
If there is **no discernible sound level** to be seen, check the following things: Is the mic turned on? Is it connected to the correct jack/is the recorder set to the correct input? Is the phantom power switched on?

If you want to listen to the recording with **headphones** while it's happening, go to the Zoom menu and **activate monitoring**.

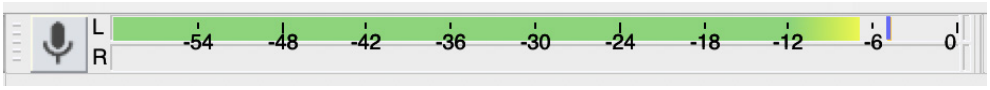
To do this, press the "**Menu**" **button** on the upper right of the device, select "**Monitor**" using the menu wheel and select "**ON**".



Now you can plug your headphones into the Zoom and listen while recording. Now start **Audacity**. Select the **Zoom** as both the **recorder** and also the **playback device**.



Set the **recording volume** (level) on the Zoom as usual and double check in Audacity whether the sound is coming in loud enough.



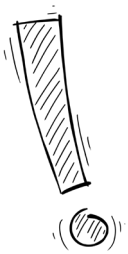
From the moment you press the "**Record**" **button** in Audacity, everything you say into the mic will be recorded.

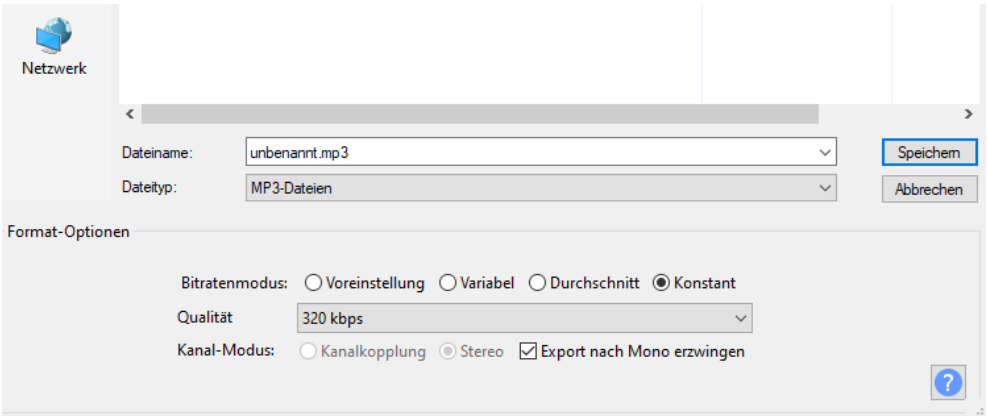
This is why on the headphones, we hear mic 1 on the left and mic 2 on the right.

Attention: When you use two microphones, the stereo recording will record **mic 1** on the **left** and **mic 2** on the **right** side.

This has the following **consequences** for the editing process:

In order for both voices to be audible on both sides in the finished show, you need to export the show as a **mono**-file in the end. When you're done with editing and ready to export your show from Audacity, click on **file/ export/export as mp3**. In the next window, check the box on the bottom right that says "**Force export to mono**".





4.1. Audio Editing for Advanced Users

There are a lot of additional things that advanced editors can do with the equipment.

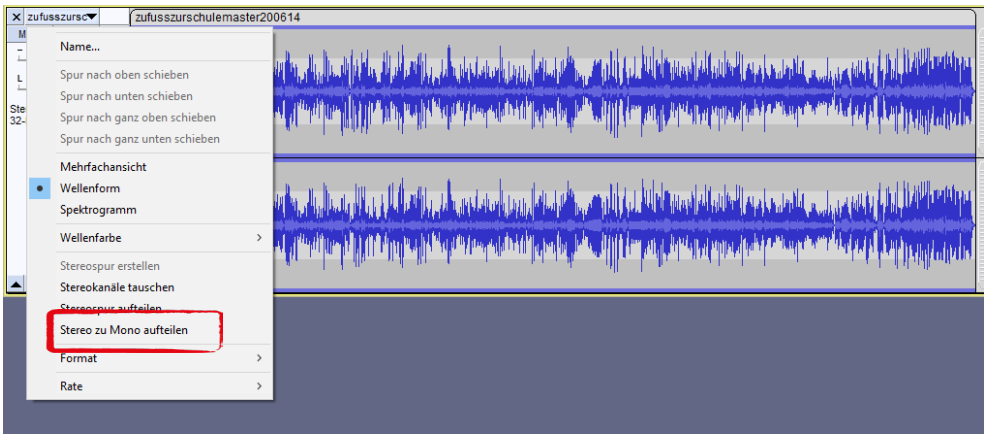
Recording two mics on different channels comes with the **advantage** of being able to edit the voices separately.

This means:
Let's says while person 1 is speaking into mic 1, person 2 is coughing into mic 2. In this case, you can cut out the cough from track 2, so all there will be left of it is a quiet cough in the background of track 1.

To be able to edit the two **voices** separately, you first need to **separate** them.

Attention: When the tracks are separated, you need to be careful when cutting, so everything is still **synchronised**!

To do this, click the black **triangle** next to the name of the audio track. A window will open. Here, select "**Split stereo to mono**". Now you can edit the two channels individually.



Attention: Music (stereo) can't be dropped into a Mono-track. You need to work with an additional track for music.

What's more, now you can hear both voices on both sides again. All that's left to do now is dropping music in at the places you like and finishing the show.

5. Recording External Sources (for Pros)

Other signals (e.g. an **electric guitar**) can also be recorded with the Zoom H4n. For this, you'll need a special **cable**.
One end of the cable needs to fit into the audio jack of the device you want to record, the other should be a big jack plug (**6,35mm**).

HIER FOTO VON KABEL MINIKLINKE AUF KLINKE

Here's how you do the recording:

Follow all the steps from chapter 2 "First Steps – Connecting the Recorder".

Very important:
before recording, you have to **deactivate phantom power**!
To switch off phantom power, press the "**Menu**" **button**, then use the menu wheel to scroll to the item "**Phantom**". Select it by pressing the menu wheel, then select "**OFF**".

If you would like to know why this is important or you have other questions about details, why not come to our workshop on sound engineering?

Plug the side of the cable with the big jack plug into the the same jack on the Zoom where you would normally plug in the mic. The Zoom is conveniently outfitted with **combination-jacks** for **XLR** as well as **jack plugs**.

The **pre-amp** amplifies every audio signal. While this is what we want with the mic, with other devices it leads to clipping and thus to distortions.

Attention: Since the Zoom has a pre-amp that's always active, line-level signals can easily lead to slight distortions. Line-level signals are produced by devices like **mixing consoles** and computers. They are much louder than mics.
The Zoom cannot record a clear signal from sources like that.

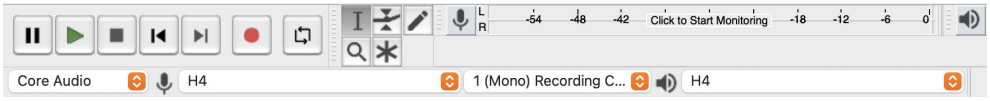
Now press both **"Input" buttons on the Zoom (1&2)**. Both should now be emitting a red light.

If you want to listen to the recording with **headphones** while it's happening, you need to go to the Zoom menu and **activate monitoring**.

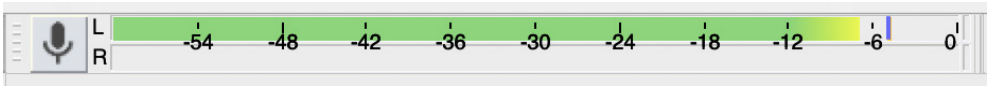
To do this, press the "**Menu**" **button** on the upper right of the device, select "**Monitor**" using the menu wheel and select "**ON**".

Now you can plug your headphones into the Zoom and listen while recording.

Now start **Audacity**. Select the **Zoom** as both the **recording** and also the **playback device**.



Set the **recording volume** (level) on the Zoom as usual and double check in Audacity whether the sound is coming in loud enough.



From the moment you press the "**Record**" **button** in Audacity, everything you say into the mic will be recorded.

6. TROUBLESHOOTING

Audacity does not recognize the Zoom recorder?

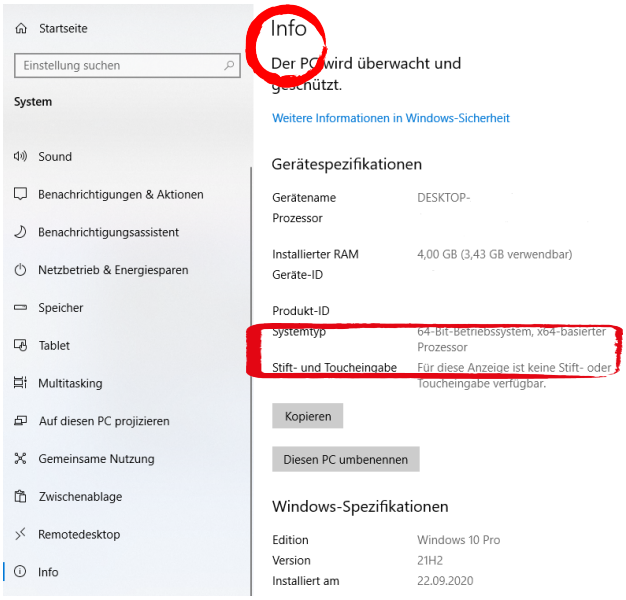
This can happen especially easily with newer Windows computers: even though you followed all the steps, Audacity does not recognize the recorder.

In this case, your operating system needs a different audio driver.

Close Audacity and go to
https://zoomcorp.com/en/us/handheld-recorders/handheld-recorders/h4n/h4n-support/

This is where you can download the newest drivers. You'll probably need the file "Windows Vista/7/8 [...]" - either the 32-bit or the 64-bit version, depending on your computer.

This driver also works on newer operating systems like Windows 10 and 11.

If you don't know whether your computer is a 32-bit or a 64-bit system type, click on the windows symbol on your computer. Look for "Settings", then select the item called "System". In the following window, select "About" from the toolbar on the left. Here you'll find your system type.

Download the driver that corresponds with your system type and install it. Then restart your computer. Now you should be able to select the Zoom recorder in Audacity.