Location Sound Recording Workshop

Thrown together by David Tamés
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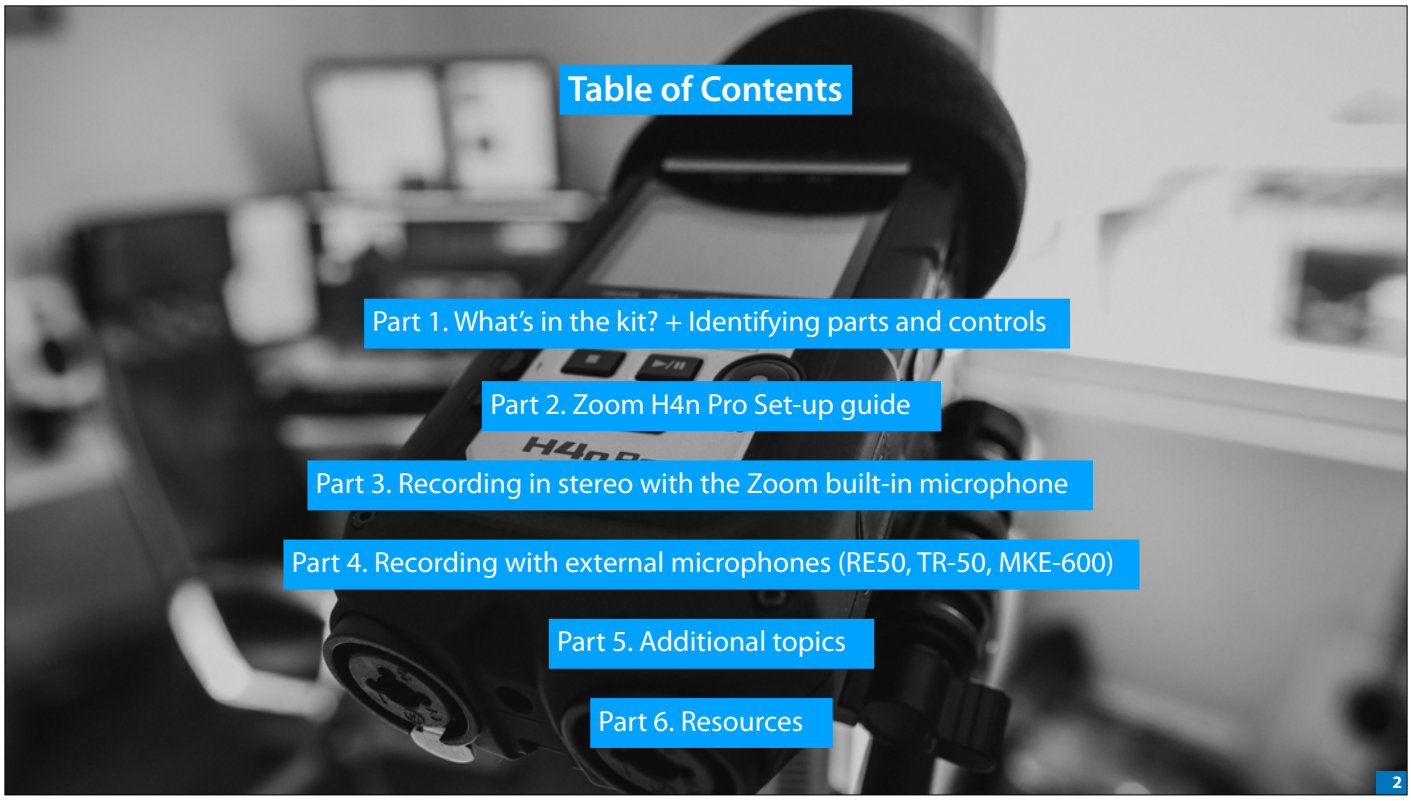
Underlined text are website links in the PDF edition of this slide deck

Photo by James Baldwin, https://unsplash.com/@chillysheep



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Location Sound Recording Workshop

Part 1. What's in the kit? + Identifying parts and controls

Reserve and checkout the kit from the CAMD Media Center

Zoom H4n Pro sound recorder

Sennheiser MKE 600 condenser shotgun microphone w/ foam windscreen

Rycote Pistol Grip and Rycote Softie Windjammer

The complete kit is provided in a rolling case*

Tram TR-50 condenser lavaliere microphone kit

Electro-Voice RE50N/D-B dynamic microphone

microphone cables

*** IMPORTANT: The Boom Pole must be reserved and checked out separately, however, it is an integral and essential part of the kit.**

Always reserve the a boom pole along with the Audio Kit. The pole can be tucked in the side strap of the rolling case with the bottom in the side pocket for easy transport with the rolling case.

Go over the kit and make sure it is complete before leaving the Media Center with the kit. Doing a sound recording test before every recording session is highly recommended.

What's in the kit?

Zoom H4n Pro sound recorder

> ⚠ 4GB SD cards are recommended, larger SD cards require very long start-up and formatting times. If smaller SD cards are not available from the CAMD Media Center, consider using your own. Always format cards before use.

Features:

- Built-in X/Y stereo microphones, adjustable 90˚ or 120˚
- Two microphone/line level inputs with XLR/TRS combo connectors (with +24 or +48V phantom power)
- Capable of four-track simultaneous recording (built in mic with two external microphones)
- Stereo 3.5mm microphone/line input (with 2.5V plug-in power)
- Stereo 3.5mm headphone output with volume control
- Built-in speaker for playback
- Records to SD and SDHC cards up to 32 GB
  (Note: start-up and card formatting times are much faster with smaller cards. e.g. 4 GB, 8 GB)
- Recording modes:
  - 16-bit/44.1 kHz WAV in Stamina mode (without limiter and limited menu options, not recommended)
  - Up to 24-bit/96 kHz WAV with limiter on or off (**48 kHz/24-bit recommended**)
- USB port for file transfer to computer
- 2-in/2-out USB audio computer interface
- Powered by 2 AA alkaline or Ni-MH rechargeable batteries or AC adapter

What's in the kit?

Zoom H4n Pro sound recorder

> ⚠ **UPDATE:** The kits are currently sent out with only one set of NiMH rechargeable batteries, however, you should have spare AA batteries available. If you switch between NiMH rechargeable and single use alkaline batteries don't forget to change the battery type in the menu, otherwise the battery level meter will not give a correct reading.

What's in the kit?

Zoom H4n Pro sound recorder

Rycote Pistol Grip and Rycote Softie Windjammer

Sennheiser MKE 600 condenser shotgun microphone w/ foam windscreen

Tram TR-50 condenser lavaliere microphone kit

Electro-Voice RE50N/D-B dynamic microphone

Sony MDR-7506 headphones

microphone cables

K-Tek Avalon boom pole w/ internal cable

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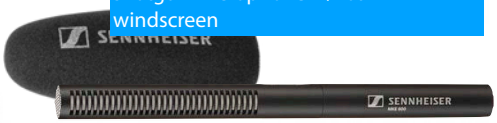
What's in the kit?

Zoom H4n Pro sound recorder



Sennheiser MKE 600 condenser shotgun microphone w/ foam windscreen

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What's in the kit?

Rycote Pistol Grip and **Rycote Softie Windjammer**

What's in the kit?

K-Tek Avalon boom pole w/ internal cable

What's in the kit?

What's in the kit?

Identifying parts and controls

Zoom H4n Pro sound recorder

Front

90/120˚ X-Y Microphone

STEREO/4CH/MTR Mode Indicator

Backlit Display

- STEREO/4CH mode shortcut buttons
  - 1 Folder
  - 2 File
  - 3 Speed (Stereo mode)
  - 4 WAV/MP3 (Stereo/4CH mode)
- MTR mode TRACK (1-4) buttons

INPUT (Built-in Mic, 1, 2) buttons

Transport Controls

REC Standby / REC button

Back

External stereo microphone jack (with plug-in power)

Speaker

1/4"-20 Tripod Socket

STAMINA mode switch
(inside battery compartment)

Battery Compartment Cover

Identifying parts and controls

Zoom H4n Pro sound recorder

Right Side

MENU Dial
(push to make selection)

MENU button

Record Input Gain

SD Card Slot

Left Side

Remote control jack

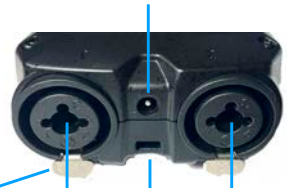
3.5mm headphone/ line out jack

Monitor Volume

USB

POWER/HOLD button

Bottom



5V DC AC Adapter Jack

Channel 1 (LEFT) Input
(combo XLR/Phone Jack)

Channel 2 (RIGHT) Input
(combo XLR/Phone Jack)

XLR Connector Release

Strap Attachment Point

Identifying parts and controls

Electro-Voice RE50N/D-B handheld dynamic omni microphone

We will call it the RE50 for short!

Carrying Pouch

5/8"-27 socket to 3/8" socket adapter
(for connecting to a boom pole, may already be threaded inside the Microphone Stand Adapter)

Microphone Stand Adapter
with 5/8"-27 threaded socket (connects to standard microphone stands or to the boom pole with the 5/8"-27 socket to 3/8" socket adapter)

XLR-3M plug

Identifying parts and controls

Tram TR-50 condenser omni lavaliere microphone

Always keep the mounting accessories (a.k.a. "jewelry") in the storage case (and keep it closed) to avoid losing them!

Storage Case

TR79 Power Supply (hardwired)

TR-50 Microphone

XLR-3M plug

Clip Tie Tac

Cable Holder with Vampire Pins

Clip Mic Holder with Vampire Pins

RM675/PX675 Battery
(not needed when using Phantom Power)

Lavaliere Windjammer

Clip Windscreen

Clip Tie Bar

Clip Tape Down

Identifying parts and controls

Sennheiser MKE 600 condenser shotgun microphone

Due to the high-sensitivity of the MKE 600, it should always be used with a shock mount

All items come together in a storage pouch

Shock mount with accessory shoe adapter (for mounting on a camera, not recommended)

XLR-3F to 3.5mm plug adapter

Foam Windshield

Note: Install a battery only if using with a camera or recorder that does not provide Phantom Power; with the Zoom, enable +48V Phantom Power and use an XLR microphone cable.

Identifying parts and controls

Rycote Pistol Grip and **Rycote Softie Windjammer**

Softie Windshield

Comb
(for keeping the windshield fluffy)

Wind noise can ruin your outdoor recordings, so always use a windjammer if there is any evidence of wind outdoors

Identifying parts and controls

Microphone cables in the kit

Mic Tail (fits in pistol grip)

Boom to Mixer/Recorder Cable

Microphone Extension Cable

Short Microphone Cable
(handy for use with RE50)

NOTE: I need to confirm exact inventory of kits available from the Media Center — David

Professional sound cables and connectors

Balanced microphone cables with XLR connectors are widely used for professional audio. Balanced wiring has two conductors and one ground plus special circuitry on each end in order to reduce susceptibility to electromagnetic interference (EMI) and allows for longer cable runs. The best cables use twisted pairs for each conductor ("star-quad") for even better EMI rejection. Consumer gear uses wiring with only one conductor and one ground and is therefore more susceptible to interference. For a technical explanation of how this works, see "What's the Difference Between Balanced and Unbalanced?," Aviom Blog, https://www.aviom.com/blog/balanced-vs-unbalanced/

Wrapping the gear

Return gear in the same configuration as you found it when you checked it out

1. Power off the recorder and make sure batteries are not installed in the microphones (Note: you normally don't need to use batteries with the shotgun or lavaliere in this kit since the Zoom provides phantom power, it's also a best practice to store gear without batteries to prevent damage from battery corrosion, dead alkaline batteries are particularly good at this)
2. Wrap all microphone cables using the over-under technique
3. Make sure all of the accessories (a.k.a. jewelry) are returned to the lavaliere microphone case
4. Make sure all accessories are returned to the shotgun and handheld microphone pouches
5. Do not wrap the coiled cable around the headphones (a.k.a. cans), instead, fold the cans, drop them into the pouch, and then drop the coiled cable on top of the cans in the pouch. Wrapping the cable around the cans damages the cable, and the proper technique is less effort
6. Store the boom pole on the side of the rolling bag for easy transport
7. Double check against kit inventory before closing bag kit is complete

boom pole slides through side strap with bottom in side pocket for ease of transport

Keep TRAM case closed to avoid losing accessories!

microphone cables are always wrapped using over-under technique

Part 3. Zoom H4n Pro Set-up guide

1. **Set the Stamina switch to OFF** (in the battery compartment)
2. **Insert batteries** (2 AA alkaline or 2 Ni-MH rechargeable) if not already installed in the recorder (observe polarity; little ribbon goes under the batteries to facilitate removal)
3. **Insert SD card** if not already installed in the recorder
4. **Power on** the recorder by sliding the power switch down for a couple of seconds. Start screen will appear. To turn off, do the same move on the power switch as you did to turn it on.

⚠ 4GB SD cards are recommended, larger SD cards require very long start-up and formatting times. If smaller SD cards are not available from the CAMD Media Center, consider using your own. Always format cards before use.

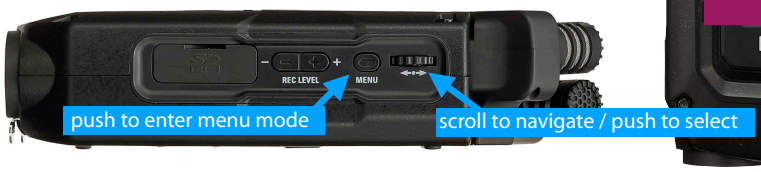
⚠ Stamina Mode locks you into recording 44.1 kHz / 16-bit without a limiter and there is a possibility of synch issues with 44.1 kHz vs. 48 kHz, with Stamina Mode ON you will get longer battery life and simpler setup, but with severe tradeoffs in terms of configuration options.

Part 3. Zoom H4n Pro Set-up guide

5. **Check the battery level indicator** and make sure you're starting with fresh batteries, and if not, you should have an extra pair in the kit (make sure of this when you check out the gear)
6. **Verify the SD card is recognized and the card can be written to**

If the recorder is reporting "Card Protected" then the write-protect tab on the card is set to not allow recording, remove the SD card and disable the write-protect tab.

If the recorder is reporting "No Card" try removing and replacing the card. The H4n can be finicky with SD cards. Repeated removal and insertion should resolve the issue. Make sure the contacts on the SD card are clean and free of contaminants.



If you see "STAMINA" in the display, STAMINA Mode is ON, power off and go back to step 1

Part 3. Zoom H4n Pro Set-up guide

7. **Perform Factory Reset** (MENU => SYSTEM => FAC RESET => Are you sure? [**YES**/NO])

Since other people have used this recorder, you want to start with a baseline of known settings which is achieved with the Factory Reset followed by the specific settings you want to change based on your recording scenarios.

Part 3. Zoom H4n Pro Set-up guide

8. **Format the SD card** (MENU => SD CARD => REC FORMAT => REMAIN | **FORMAT**) => CARD FORMAT Are you sure? [**YES** | NO]

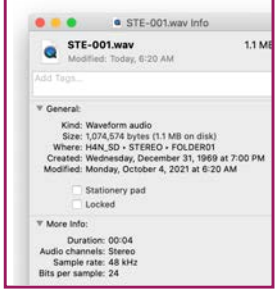
> ⚠ It's a best practice to format the card prior to beginning your recording session. You don't want to start your recording session with a corrupted card or media from another project.

> ⚠ The recorder works best with 4GB or 8GB cards. With larger cards, the formatting and start-up (as the recorder verifies the card) will take a very long time. If your kit comes with a large capacity card, consider using your own 4GB or 8GB card if long start-up and formatting times are an issue for your production.

Part 3. Zoom H4n Pro Set-up guide

9. **Set the date and time** (MENU => SYSTEM => DATE/TIME => [Adjust and Select each of Year, Month, Day, Hours, Minutes, Seconds]

> ⚠ With Firmware 1.1 (the latest as of 10/4/2021) the Zoom sets the Modified Date for files based on the DATE/TIME, however, the Creation Date will be set to January 1, 1970 (curiously the beginning of time in the Unix operating system, with time zone variations).



Part 3. Zoom H4n Pro Set-up guide

10. Set the battery type (MENU => SYSTEM => BATTERY => [ALKALINE / Ni-MH] so the Zoom can properly calculate the time remaining on the battery

> ⚠ Alkaline and Ni-MH Rechargeable batteries have very different discharge characteristics, therefore, if the battery type is not set properly, then the battery level indicator will not be accurate.

> ⚠ The recorder draws a lot of current from the batteries. Always keep an extra set of fresh Alkaline or fully-charged Ni-MH Rechargeable batteries for backup!

> ⚠ Never place Alkaline batteries in a Ni-MH battery charger or invert the polarity of Ni-MH batteries in the charger. This can lead to chemical leaks or possible fire!

Part 3. Zoom H4n Pro Set-up guide

11. Select the record format (Press WAV/MP3 => REC FORMAT [Select Option]

a. Choose either **WAV 48 kHz/16-bit** or **WAV 48 kHz/24-bit**

currently the video production standard; provides more dynamic range than 16-bit (though with the noisy preamps of the Zoom H4n the difference is not as dramatic as you would expect)

(you can also select this in the menu: MENU => REC => REC SETTINGS => REC FORMAT => [Select Option])

Part 3. Zoom H4n Pro Set-up guide

12. STEREO MODE: The H4n has four operational modes:

STEREO* — this mode was enabled when we set factory defaults; this mode enables one pass stereo or mono recordings. For this workshop and class this mode is recommended for recording with the Zoom H4n. Be aware that WAV file recorded will be mono or stereo based on the the MONO MIX setting and input sources.

STAMINA — can only record/playback in WAV 44.1kHz/16-bit and MP3 format with limited configuraiton options — disable this to allow 48kHz/24 recording and custom configurations.

4 CH (CHANNEL) — for simultaneous recording with both external inputs and the built-in microphone, good for capturing a mix of stereo ambience and dialogue or specific speaker or instruments during a live event.

MTR (MULTI TRACK) — Record one track at a time and then combine them with tother tracks (overdubbing), also allows for record using effects and mixing track levels after recording.

* We don't need to set STEREO MODE since this is the default mode set when we reset the recorder to Factory Default settings. STEREO MODE can also be set in the menus: MENU => MODE => STEREO

Part 3. Zoom H4n Pro Set-up guide

13. a. Enable the LIMITER on the built-in microphone (MENU => INPUT => INPUT SETTINGS => COMP/LIMIT => COMP/LIMITER: MIC => MIC COMP/LIMITER => **LIMIT1**

b. Enable the LIMITER on the external inputs (MENU => INPUT => INPUT SETTINGS => COMP/LIMIT => COMP/LIMITER: INPUT => INPUT COMP/LIMITER => **LIMIT1**

14. We're finally ready to start making some recordings!

To record stereo, follow these steps:

1. **Select built-in microphone** as the input (confirmed by red LED)
2. **Verify stereo mode** (STEREO LED should be activated)
   Note: Not the same as recording stereo, more on that later!
3. **Connect headphones** to monitor recording
4. **Adjust headphone level** as needed (does not affect recording)
5. **Position recorder** with microphones pointing towards the source
6. **Press record once**, this will enter **RECORD STANDBY Mode** (Record Button will FLASH); this allows you to listen to the sound and adjust input levels as needed prior to recording.

7. **Evaluate the level meter** while listening with the headphones for any problems (background noise, distortion, cable crackle, etc.)
8. **Adjust the recording input gain** as needed (based on your evaluation of the input level meters, more about adjusting levels on the next slide)
9. **When you are ready to start recording, press the REC Button** (the button will now glow solid and timecode numbers will begin to ascend), you are now recording!
10. **Pressing the REC Button during recording will set a Marker** in the file at the timecode when you pressed the button*
11. **Press STOP to stop the recording**, your recording will be in a WAV file with the name shown in the LCD display

*These markers can be accessed by many programs, e.g. Adobe Audition, however, Adobe Premiere Pro ignores these markers when you import WAV files

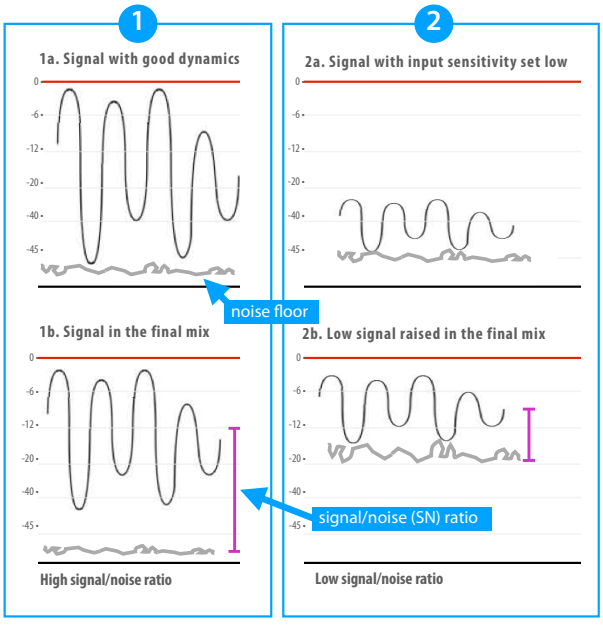
Setting the right input gain

1a. A signal with good dynamics, the levels have been set properly during recording

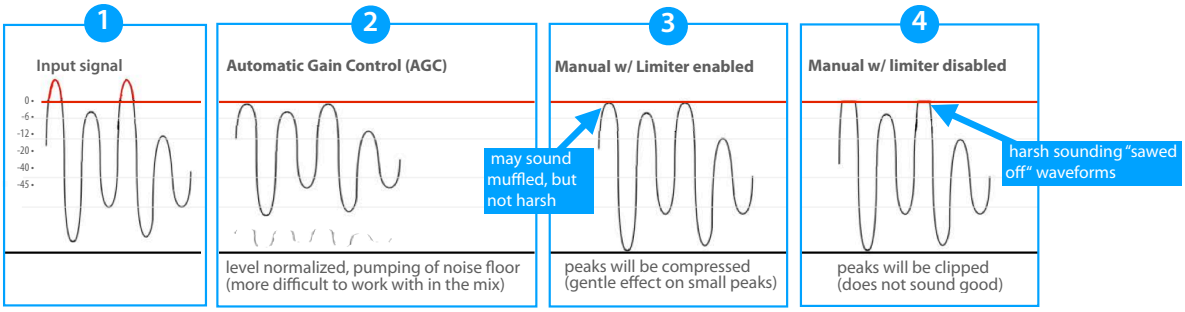
1b. In the final mix, this signal sits well above noise floor and mixes well with other audio elements in the mix

2a. A signal with poor dynamics, the input sensitivity was set too low during recording

2b. Signal in the final mix, When level is raised in order to match other sounds, noise is also raised and becomes more audible

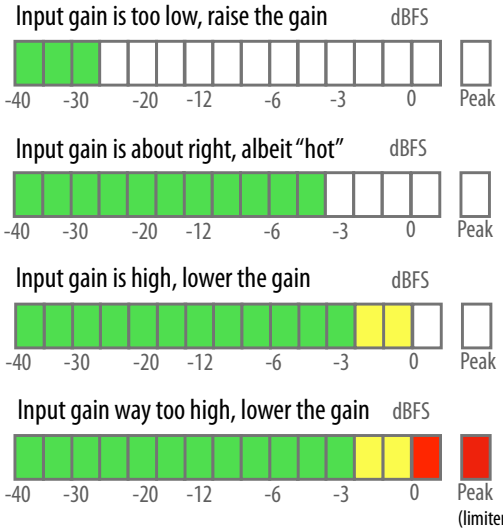


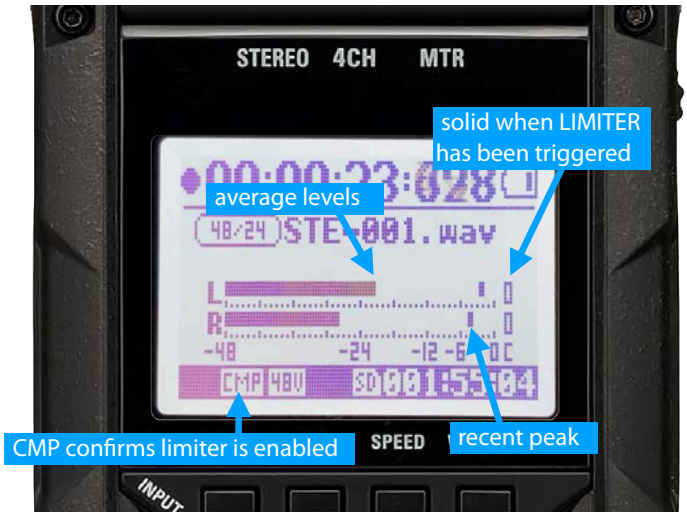
Setting the right input gain



1. Input signal with peaks over 0 dBfs
2. Recorded signal w/ Automatic Gain Control (AGC), level of recorded signal is normalized
3. Recorded signal w/ manual settings and Limiter enabled, peaks of recorded signal are compressed
4. Recorded signal w/ manual settings and limiter disabled, peaks of recorded signal are clipped

Setting the right input gain*





* these guidelines are 'hotter' than often recommended, this is because the Zoom H4n has a high noise flor, so it's best to record a tad on the hot side as long as you can avoid triggering the limiter to ensure the nest signal to noise ratio.

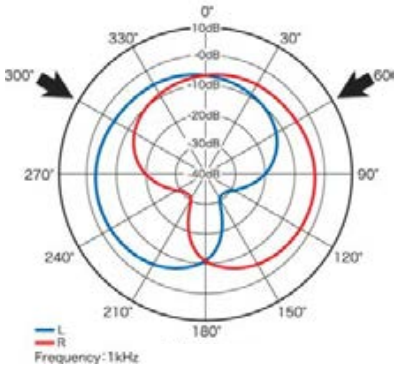
Choosing a stereo field width

(120˚ or 90˚)

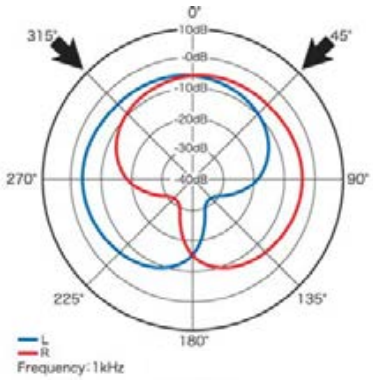
* Be careful: If you set MONO MIX to ON in the INPUT Menu (useful when using a single external microphone that you want panned both Left and Right) the stereo light remain lit even though you'll be recording in dual-mono, the recorder lets you know it is recording dual mono by naming the file MONO-nnn instead of STE-nnn. This is why I don't recommend changing the default file name convention to date, as you will lose this valuable feedback of what's going on.

Part 4. Recording in stereo with the Zoom built-in microphone

Choosing a stereo field width



(120˚)
X-Y Stereo



(90˚)
X-Y Stereo

Zoom polar patterns courtesy of TBD

Reviewing your recordings in the field

1. Press the FILE button, a list of files in the current folder will be displayed
2. Scroll to the file you want and then SELECT it
3. Choose SELECT from the menu and the file will be loaded and ready to play
4. Use the transport controls to review the file

* If already powered on, go to MENU => USB => STORAGE and the Zoom will mount as a device on the desktop. Press MENU to disconnect.

Transfer audio from recorder to computer

1. **Start with the Zoom powered off***
2. **Connect the USB cable** between the Zoom and your computer
3. The Zoom will power on on it's own (when powered on and connected to the computer, you are given the choice of entering STORAGE Mode or AUDIO I/F Mode)
4. **Enter STORAGE Mode**
5. The SD card in the Zoom will **appear as a mounted storage volume** on you computer
6. If you recorded WAV files in STEREO MODE, they will appear in the **/H4N_HD/STEREO/FOLDER01** folder (both stereo and dual-mono recordings) Note: You can change the destination folder in the menu in order to keep your projects in separate folders, however, FOLDER01 is the default)
7. **Copy the audio files** to your project media folder
8. Press the MENU button to return to normal operation

* If already powered on, go to MENU => USB => STORAGE and the Zoom will mount as a device on the desktop. Press MENU to disconnect.

Location Sound Recording Workshop

Part 5. Recording with external microphones (RE50, TR-50, MKE-600)

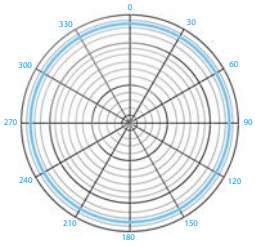
Comparison of microphones

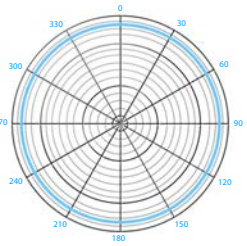
Microphone	Zoom H4n Pro **built-In**	Electro-Voice **RE50N/D-B**	Tram **TR-50**	Sennheiser **MKE 600**
Form Factor				
Technology	**Electret Condenser**	**Dynamic**	**Electret Condenser**	**Electret Condenser**
Pick-up Pattern	**Cardioid (X-Y Stereo)**	**Omnidirectional**	**Omnidirectional**	**Super-Cardioid (lobar)**
Power	**Built-in**	**Not Required**	RM675/PX675 Battery or **+48V Phantom** (preferred)	AA Battery **or +48V Phantom** (preferred)
Sensitivity	**High**	**Low**	**High**	**High**
Sonic Characteristics	high-frequency response is exaggerated with a brittle sound; not as smooth as TR-50 or MKE 600	overall frequency response not as smooth as TR-50 or MKE 600 but does well in voice applications	smooth frequency response with a high-frequency boost that compensates for typical lavaliere placement scenarios	smooth on-axis frequency response; off-axis response exhibits significant rejection but with coloration due to interference tube design characteristics
Differentiation	width of stereo field can be adjusted (90˚ or 120˚)	rugged; low handling noise; high weather resistance; integrated wind protection and pop filter	small, flat, and easy to hide; kit comes with variety of mounting clips	highly directional and sensitive; requires mounting on pistol grip hand-held or on boom due to handling noise
Use Cases	ambience, SFX, and music recording in stereo	hand-held on-camera reporting, VOXPOP; voice-over; also good for HIGH SPL SFX due to sensitivity	worn on speaker for interviews, cinéma-vérité, on-camera reporting, may also be used as a hidden mic	boom-mounted or pistol-grip-mounted dialogue and SFX recording outdoors

Comparison of microphone polar patterns

Electro-Voice **RE50N/D-B**
Omnidirectional

Tram **TR-50**
Omnidirectional

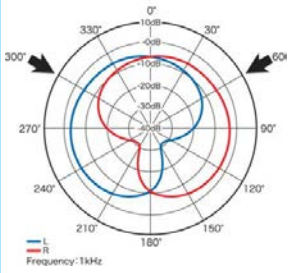


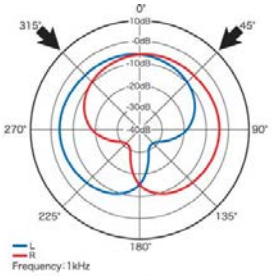


omnidirectional microphones are less omnidirectional with higher frequencies.

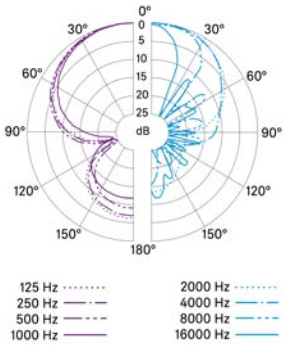
Zoom H4n Pro
X-Y Stereo (Cardioid)
(**built-in** 120˚)

Zoom H4n Pro
X-Y Stereo (Cardioid)
(**built-in** 90˚)





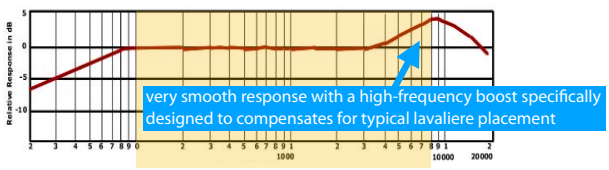
Sennheiser **MKE 600**
Super-Cardioid (lobar)



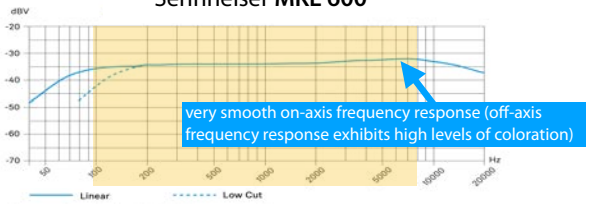
Zoom polar patterns courtesy of TBD; MKE 600 polar pattern courtesy of Sennheiser

Comparison of microphone frequency response characteristics

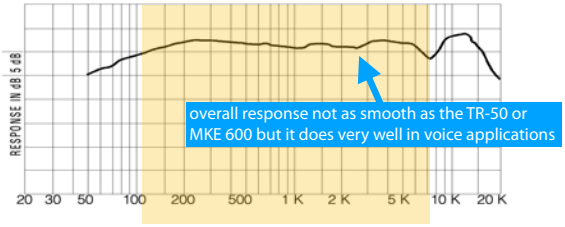
Tram **TR-50**



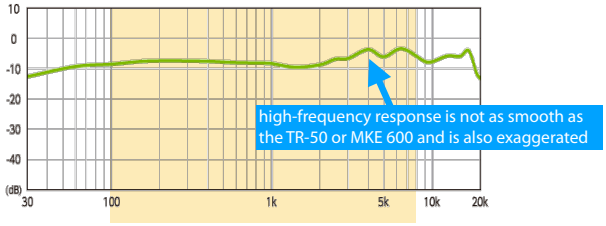
Sennheiser **MKE 600**



Electro-Voice **RE50N/D-B**

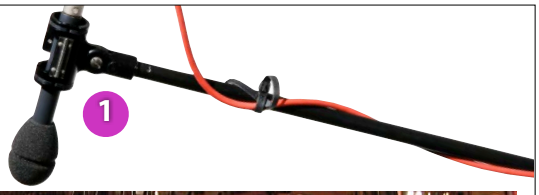


Zoom H4n Pro (built-in microphone)



TR-50 response diagram from Theodore A. Rapp, Associates; MKE 600 response diagram from Sennheiser; RE50N/D-B response diagram courtesy from Electro-Voice; Zoom response diagram from Ken Rockwell

Microphone placement options



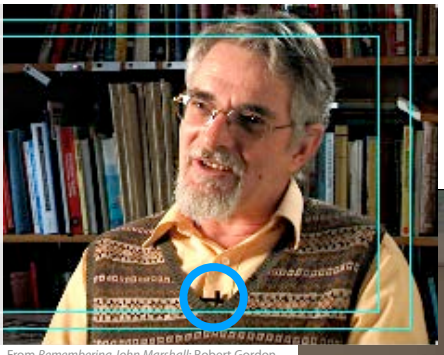
Example: Person speaking on camera, here are the options in order of preference for the best quality dialogue recording:

1. Directional microphone on boom above the person
2. Directional microphone on boom below the frame line (not shown)
3. Lavaliere microphone on person
4. Hand-held microphone
5. Directional microphone on the camera

Robin Hamilton, writer and journalist

Lavaliere and boom mounted mic placement tips

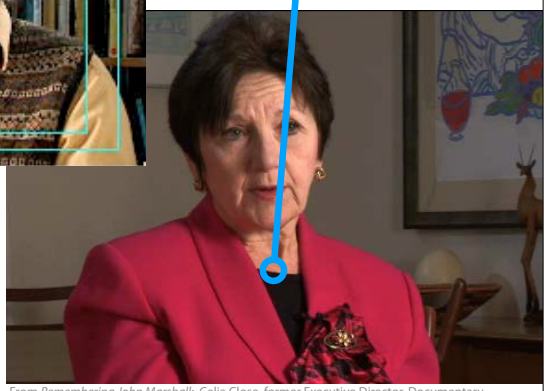
Omnidirectional lavs sound dryer (less "room") compared to a boom mounted microphone. Place the lavaliere so it is in the middle of the chest, not to high, not too low, and centered whenever possible.



Boom mounted directional microphones should be placed as close to source (but not too close and above the frame line), a rule of thumb (experiment and listen) is ~ 3 feet max (for a short-shotgun) and 2.5 would be far better in most environments.

From *Remembering John Marshall*; Robert Gordon, Anthropologist and author of *The Bushmen Myth*

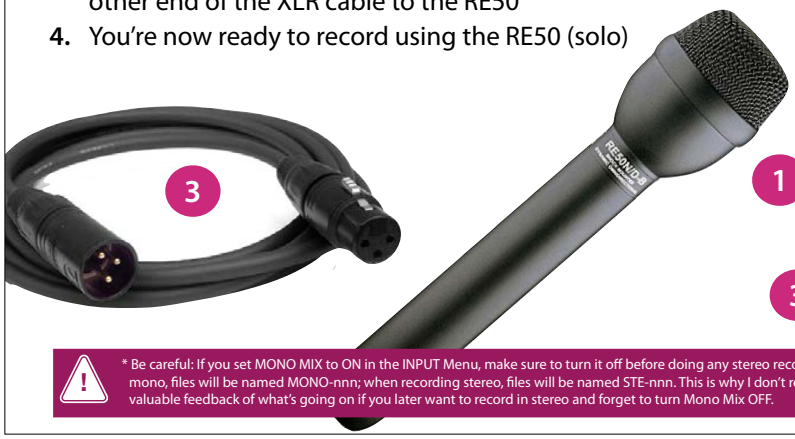
Aim the boom mounted microphone at the speaker's mouth or just a tad below, at an angle to the front of the speaker of about 45 degrees. Getting the mic as close as you can for dialog shots in noisy environments will makes all the difference. You want dialog to be much louder relative to other sounds in the environment and any reflections coming off surfaces in your location. Clean dialog is critical for intelligibility. **Sound blankets** on hard surfaces can help the quality of the sound by damping reflections.



From *Remembering John Marshall*; Celia Close, former Executive Director, Documentary Educatonal Resources

Recording with the RE50 dynamic handheld mic (solo)

1. **Select external microphone input** (the LEDs will indicate Inputs 1/2 are now active)
2. **Set Mono Mix ON*** (MENU => INPUT => INPUT SETTINGS => MONO MIX => **ON**), when this is on, the Zoom records a dual-mono WAV file, Input Ch1 is panned to both Ch1/L & Ch2/R
3. Connect the XLR cable to Ch1 Input on the Zoom and the other end of the XLR cable to the RE50
4. You're now ready to record using the RE50 (solo)



* Be careful: If you set MONO MIX to ON in the INPUT Menu, make sure to turn it off before doing any stereo recording with the Zoom. Always check the name of the file being created, when recording mono, files will be named MONO-nnn; when recording stereo, files will be named STE-nnn. This is why I don't recommend changing the default file name convention to date, as you will lose this valuable feedback of what's going on if you later want to record in stereo and forget to turn Mono Mix OFF.

Recording with the TR-50 condenser lavaliere mic (solo)

1. **Select external microphone input** (the LEDs will indicate Inputs 1/2 are now active)
2. **Set Mono Mix ON** (just as you did for recording with the RE50 solo, see previous slide including warning about Mono Mix)
3. **Enable +48V Phantom Power** (MENU => INPUT => INPUT SETTINGS => PHANTOM => Select **+48V**) (don't install the battery in the TR79 power supply)
4. Connect the XLR cable to Ch1 Input on the Zoom and the other end to the TR79 power module
5. Use accessories provided to place the TR-50 in a good position
6. You're now ready to record using the TR-50 lavaliere mic

Recording with the MKE 600 condenser shotgun mic (solo) 1/2

1. **Decide** if you are going to use this microphone:
   a. **Handheld** using the pistol grip, or
   b. **On the boom pole** (attach the pistol grip to the end of the boom)
2. **Select external microphone input** (the LEDs will indicate Inputs 1/2 are now active)
3. **Set Mono Mix ON** (just as you did with solo recording with the RE50 or TR-50)
4. **Enable +48V Phantom Power** (MENU => INPUT => INPUT SETTINGS => PHANTOM => Select +48V) *(don't install a battery in the battery compartment)*

Recording with the MKE 600 condenser shotgun mic (solo) 2/2

4. **Mount** the MKE 600 in the Lyre Mount on pistol grip
5. **Connect** the short adapter cable that goes between the microphone and the grip handle (XLR-3M connector fits in handle)
6. **Connect** the XLR-3M connector in the pistol grip handle to either:
   a. an XLR microphone cable connected to Input 1/Left on the Zoom, or
   b. the XLR-3F connector on the end of the boom pole; then connect a short XLR mic cable between the boom pole and Input 1/Left on the Zoom
7. **Slip the Rycote Softie windjammer over the mic** to prevent wind noise outdoors (the MKE 600 foam windscreen can deal with the wind noise created by movement during interior use, but it does not provide sufficient protection against wind outdoors)
8. Now you are ready to record with the MKE 600 (solo)

⚠ Avoid spinning the sections of the boom pole when extending and contracting the pole or spinning the sections when loose in order to prevent the coiled cable from getting gnarled inside. If you experience any resistance contracting thepole, a gnarl may have developed in the cable. To resolve this problem, seek assistance from your instructor or Media Center staff. If you are experienced using professional audio gear, you can detangle the cable following the steps in this video from K-Tek, the maker of the pole: https://ktekpro.com/videos/untangle-coiled-boom-pole-cable/

Part 5. Recording with external microphones (RE50, TR-50, MKE 600)

Recording using two separate external mics (recording to a 2 channel WAV file) with individual control of input gain (e.g. TR-50 and MKE 600)

1. **Turn Mono Mix OFF** (MENU => INPUT => INPUT SETTINGS: MONO MIX => **OFF**) *Zoom will now record Input 1 to Ch1/L and Input 2 to Ch 2/R in the WAV file*
2. **Turn 1/2 Linking OFF** (MENU => INPUT => INPUT SETTINGS: 1/2 LINK => **OFF**)
3. **Adjust Input Gain** by first selecting the input to control by pressing the corresponding MIC INPUT button and then adjust input gain using the REC LEVEL control

Summary of recording use cases and corresponding Zoom H4n configuration

Microphone	Zoom H4n Pro **built-In**	Electro-Voice **RE50N/D-B**	Tram **TR-50**	Sennheiser **MKE 600**	Two Discrete Mono Mics
					
Use Case	stereo ambience, SFX, music, and live events	hand-held, VOXPOP; voice-over; good for high SPL SFX due to low sensitivity	worn on speaker, may also be used as a hidden mic	boom or pistol-grip-mounted dialogue and SFX	two actors or two interview subjects
Recorder Inputs Active	Internal 1 (Left) + Internal 2 (Right)	Extenal Input 1	Extenal Input 1	Extenal Input 1	Mic 1: External Input 1 Mic 2: External Input 2
Phantom Power MENU => INPUT => INPUT SETTINGS => PHANTOM => +48V	N/A	**DISABLED**	**+48V ENABLED**	**+48V ENABLED**	Depends on micrphone used
Recording Mode MENU => MODE => ___	**STEREO**	**STEREO**	**STEREO**	**STEREO**	**STEREO**
Mono Mix MENU => INPUT => INPUT SETTINGS: MONO MIX => __	**OFF**	**ON**	**ON**	**ON**	**OFF**
1/2 Linking MENU => INPUT => INPUT SETTINGS: 1/2 LINK => __	**ON**	**ON**	**ON**	**ON**	**OFF** (set input gain for Ch.1 and Ch. 2 independently)
WAV File produced	**Stereo** (1/Left, 2/Right)	**Dual Mono** (1, 2 identical)	**Dual Mono** (1, 2 identical)	**Dual Mono** (1, 2 identical)	**2 Discrete Channels** (1, 2)

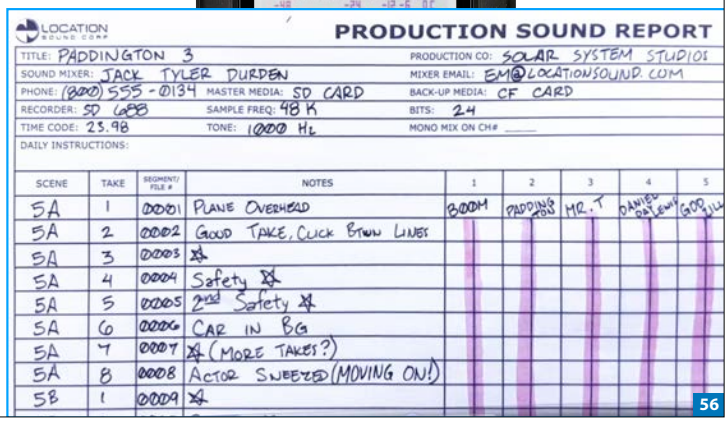
Audio Location Kit Introduction Workshop

Part 5. Additional topics

Part 5. Additional topics

Always create a sound log (a.k.a. sound report) to go along with your recordings

- Keep track of the recording format, microphone, recorder setup, file name, date, place, and other details in a sound log.
- If you can, SLATE your takes (add a verbal description of what you're recording at the beginning) which helps in identification of files without having to listen to the whole thing.
- The recorder shows you the file name, making it easy to enter the names in your sound log.
- Sound is far more difficult to scan than video, therefore, a good sound log will make postproduction far more efficient, enter descriptions from your log into your Premiere Pro project bin after each sound recording session.



LOCATION SOUND CORP

PRODUCTION SOUND REPORT

TITLE: PADDINGTON 3	PRODUCTION CO: SOLAR SYSTEM STUDIOS
SOUND MIXER: JACK TYLER DURDEN	MIXER EMAIL: EM@LOCATIONSOUND.COM
PHONE: (000) 555-0134	MASTER MEDIA: SD CARD
RECORDER: SD 688	SAMPLE FREQ: 48 K
TIME CODE: 23.98	TONE: 1000 Hz
	BACK-UP MEDIA: CF CARD
	BITS: 24
	MONO MIX ON CH# ____

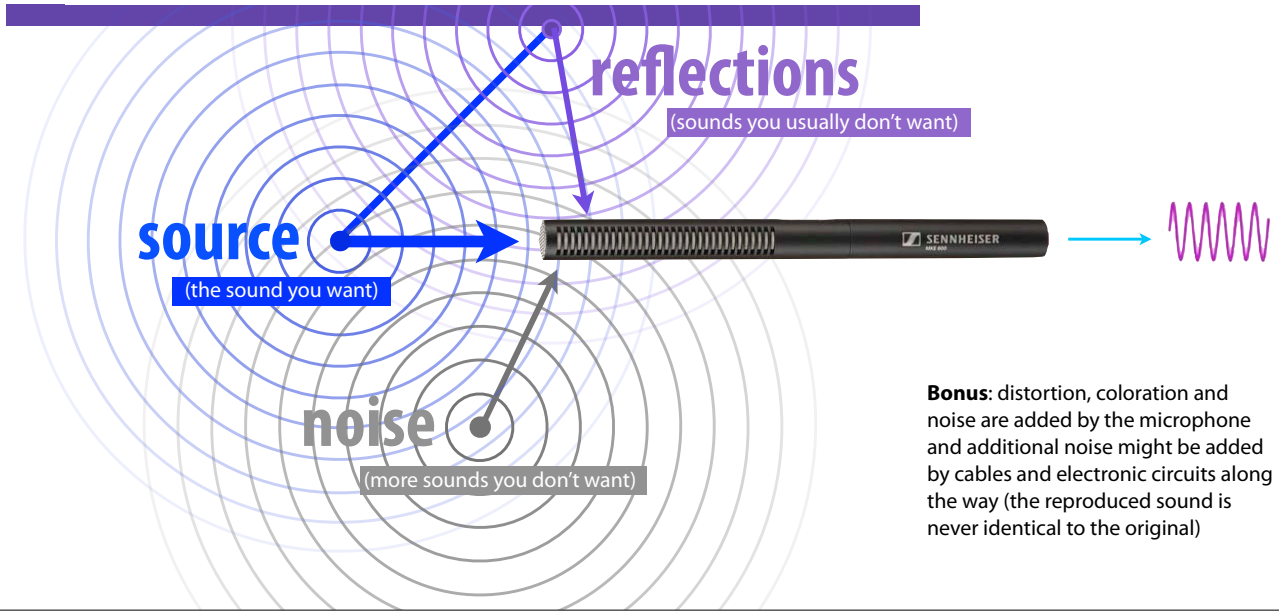
DAILY INSTRUCTIONS:

SCENE	TAKE	SEGMENT/ FILE #	NOTES	1	2	3	4	5
5A	1	0001	PLANE OVERHEAD	BOOM	PADDINGTON	MR. T	DANIEL RADCLIFFE	GOOSE
5A	2	0002	GOOD TAKE, CLICK BTWN LINES					
5A	3	0003	☆					
5A	4	0004	Safety ☆					
5A	5	0005	2nd Safety ☆					
5A	6	0006	CAR IN BG					
5A	7	0007	☆ (MORE TAKES?)					
5A	8	0008	ACTOR SNEEZED (MOVING ON!)					
5B	1	0009	☆					

Sound report image courtesy of Location Sound Corporation, from the video "Sound Report - The Fundamentals," https://www.youtube.com/watch?v=GN1pitPiPsE

Part 5. Additional topics

recording sounds (and then some)



Bonus: distortion, coloration and noise are added by the microphone and additional noise might be added by cables and electronic circuits along the way (the reproduced sound is never identical to the original)

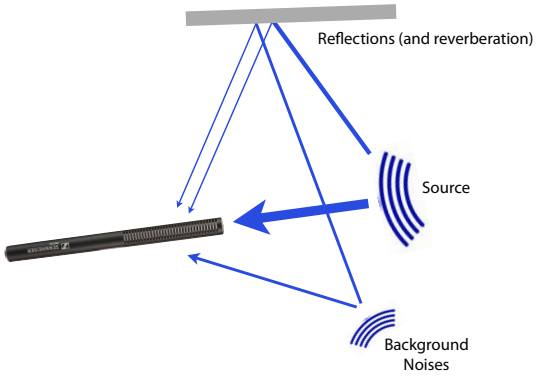
Part 5. Additional topics

mic placement fundamentals

Try to record **close to your source** because sound intensity falls off rapidly, for example, doubling the distance from the source cuts the intensity to a fourth of what it was before.

Keep in mind you're actually recording:

1. The **direct sound** from the source,
2. The **reflected sound** from surfaces close to the source (including reverberation), and
3. the **background noise**



Rule of thumb:
Place the microphone three to four times closer to the source than to any sources of noise or reflections.

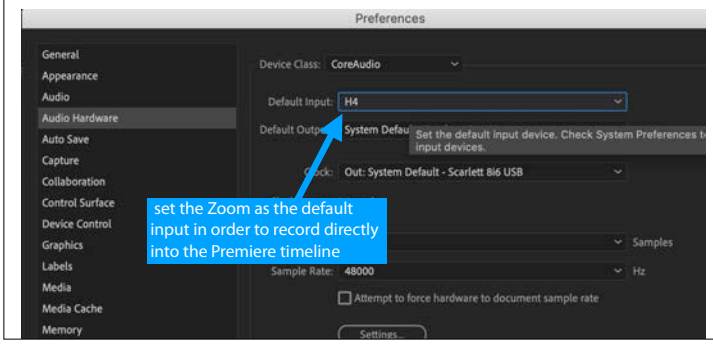
Through experimentation (recording, listening, reflecting on what your recorded, repeating the process under various circumstances) you will begin to understand the nuances of microphone placement.

Part 5. Additional topics

Using the Zoom as a 2-in/2-out USB audio interface

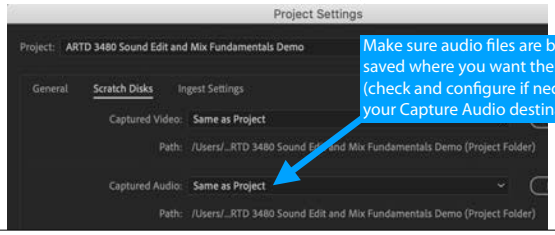
- When you connect via USB, the Zoom gives you the option of Storage Mode or USB Interface Mode
- If you choose USB Interface Mode, it will then offer the option to set the sampling rate to 44.1 kHz or 48 kHz (video standard)
- This can be very handy for VO and Foley recording in sync with picture directly into the Premiere Pro timeline, allowing you to determine right away if things are working, saving you a lot of time.

Premiere Pro => Preferences => Audio Hardware



set the Zoom as the default input in order to record directly into the Premiere timeline

File => Project Settings => Scratch Disks



Make sure audio files are being saved where you want them (check and configure if necessary your Capture Audio destination)

Part 5. Additional topics

Using the Zoom on a boom pole or light stand

- You can attach the recorder to anything that has a standard 1/4”-20 tip commonly used on tripods and other small grip gear.
- With a 3/8”-16 socket to 1/4”-20 tip adapter you can use the Zoom on the end of a standard boom pole.

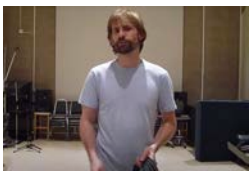
In order to monitor the recording, use a 3.5mm TRS extension cable to connect your headphones to the recorder. This cable can be run inside some boom poles (e.g. Rode Mini boom pole). If you already have a wired boom pole, then you’ll need to fashion some 3.5mm TRS to XLR adapters.

3/8”-16 socket to 1/4”-20 tip adapter

Part 7. Resources

Production Sound Report (PDF, download from Canvas), use these forms to keep track of your sound recordings

Zoom H4n Pro Operation Manual (PDF), the manual offers a guide to all of the functions, worth a quick skim



UCLA Post Production: How To Wrap A Cable (video, David McKenna), all of the cables in the location sound kit should be wrapped using this technique

Audio Bootcamp Field Guide (book, Ty Ford), the best, most concise guide on sound for video

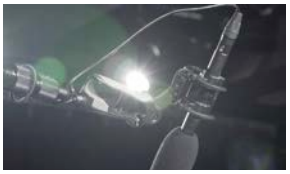
Recording Sound on Location (video, Lizi Hesling), notes based on "Recording Sound on Location" can be download from Canvas

Zoom H4N Intro and Sound Recording (video, Jonny Ouk, CAMD Media Center)

Part 7. Resources

Recording Sound on Location (book, Jay Rose), the most comprehensive book on location sound recording, available through the Snell Library

Location Audio Recording with Anthony Q. Artis (LinkedIn tutorial), an excellent course with practical examples

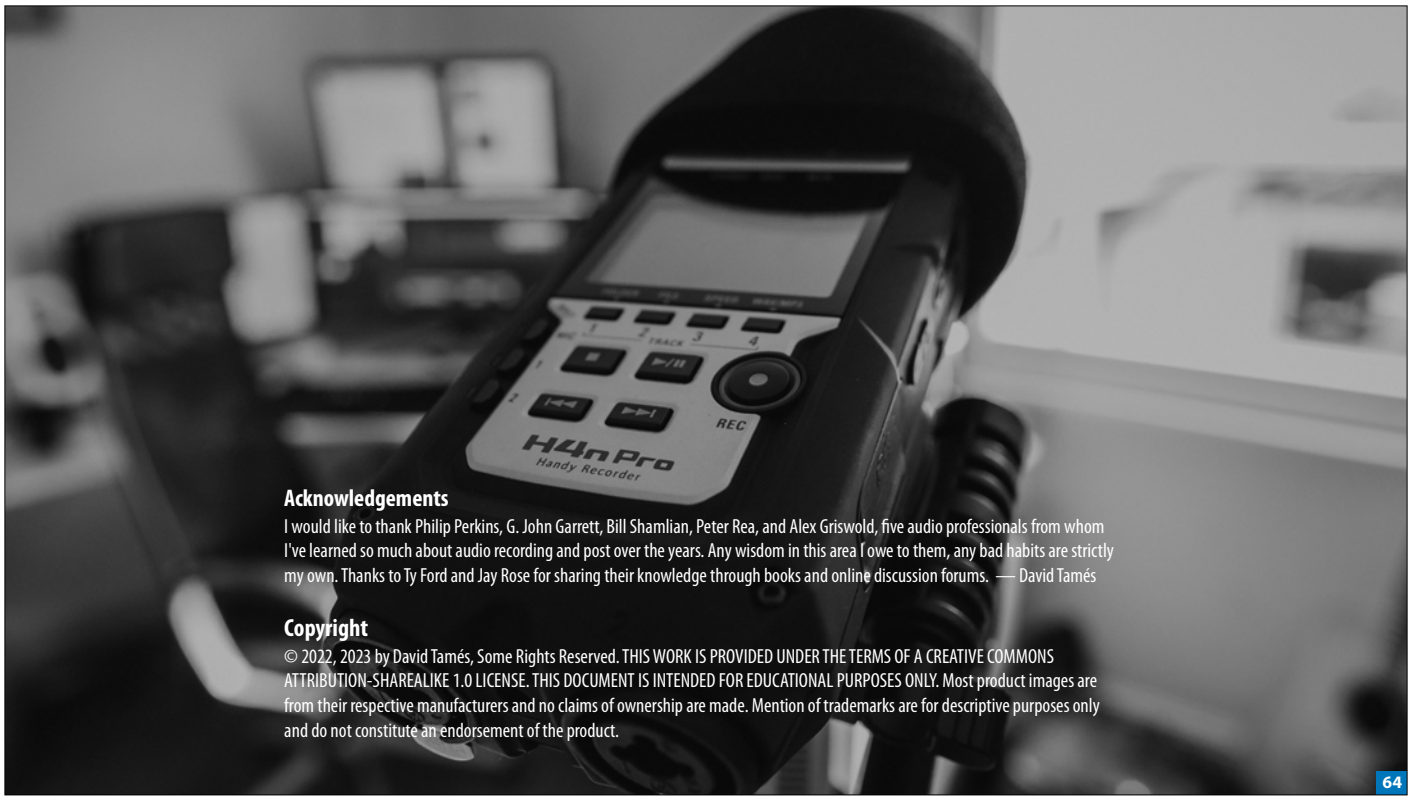


Comparison of four microphone placements (video, David Tamés), compares the sound perspective of four commonly used microphone placement options.

freesound.org (website) is a good source for finding open-source sound effects and ambience, consider sharing

OBT Music Library (website) as a CAMD student you have access to this library of music cues, login credentials are listed in Canvas

Rycote Softie Windshield vs. Foam Windscreen (video, David Tamés), demos the impact of using a windjammer



Acknowledgements

I would like to thank Philip Perkins, G. John Garrett, Bill Shamlian, Peter Rea, and Alex Griswold, five audio professionals from whom I've learned so much about audio recording and post over the years. Any wisdom in this area I owe to them, any bad habits are strictly my own. Thanks to Ty Ford and Jay Rose for sharing their knowledge through books and online discussion forums. — David Tamés