



ZYLIA Portable Recording Studio Reference manual

Based on ZYLIA Studio version 1.8.1

Instruction revision: A

Zylia sp. z o. o.
Umultowska 85,
61-614 Poznań, Poland

record@zylia.pl
phone: +48612794044
www.zylia.co

KRS: 0000270693
REGON: 140778047
NIP: 5252380826



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Hardware

Components

- ZYLIA ZM-1 device
- ZYLIA ZM-1 stand
- USB 2.0 (type B) to microUSB 2.0 (type B) cable; 3 m long
- 5/8" to 3/8" adapter
- Quick Setup Guide leaflet



ZYLIA ZM-1
microphone



ZYLIA ZM-1
stand



Adapter



USB cable



Assembling microphone with a stand

ZYLIA ZM-1 has a detachable stand. You can disassemble it using 3/16 inch hex key. To assemble it back, simply insert stand in the device (you will notice positioning incision), then insert the screw and use a hex key to screw it.



Mounting options

ZYLIA ZM-1 is equipped with a tripod. The device itself has 1/4" inner thread (compatible with camera stands – picture on the left side). Set includes also 5/8" to 3/8" adapter (inserted into the tripod) which is compatible with standard microphone stands (picture on the right side).



LED status indicator

The LED located on the equator of the device informs on the current status of the microphone.

- White light – ZYLIA ZM-1 is powered
- Blue light – ZYLIA ZM-1 is ready to use (driver is loaded)
- Red light – ZYLIA ZM-1 is capturing data and sends them to the computer

On Windows operating systems blue light will appear after launching recording application (e.g. Reaper)

It is possible to dim LED or even turn it off completely using ZYLIA Control Panel, please refer to the relevant section of this manual.

Cleaning

Clean the surface of the microphone with a soft dry cloth. To prevent damage to the finish or casing, do not expose the microphone to chemical products.

Driver installation

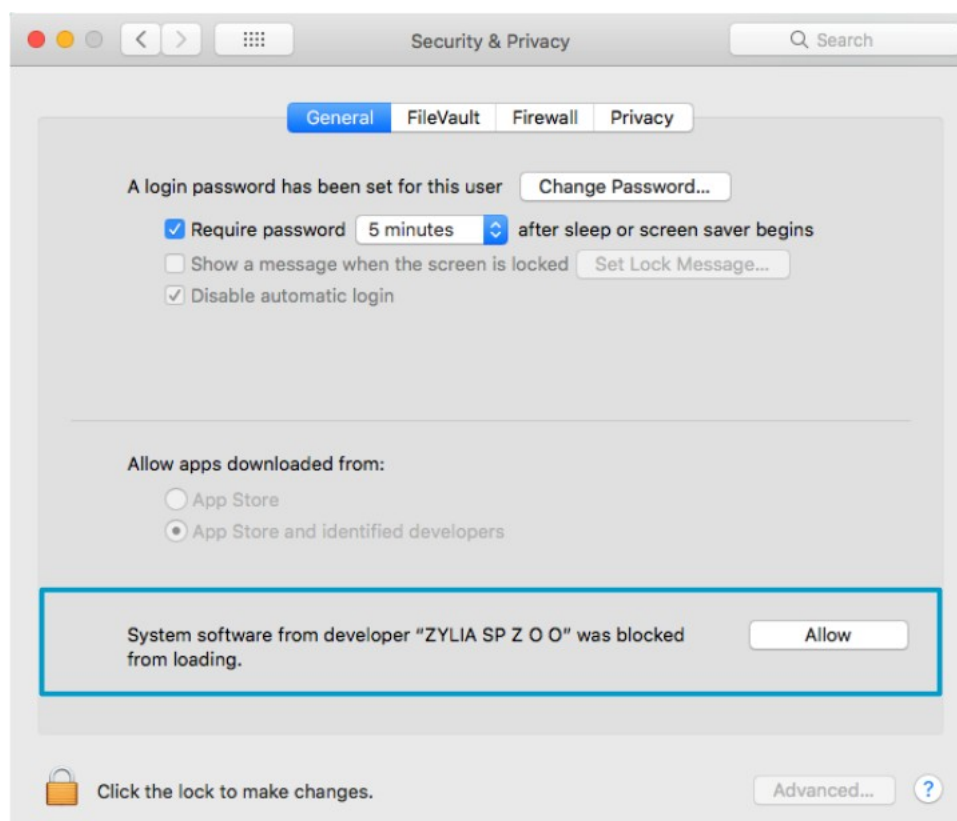
ZYLIA ZM-1 requires correct driver installed before first use. It's recommended to use the latest version of the ZM-1 driver and to update obsolete drivers.

Driver download link: <http://www.zylia.co/downloads.html>

Instruction

1. Close other applications
2. Download the ZM-1 driver appropriate for your operating system
3. Run installer and follow displayed instructions
 - a) macOS 10.13 users must allow driver to be load:
 - Open *Privacy and security settings*
 - Click *Allow*





OS X 10.9 users should restart their computer after driver installation.

Windows users should be aware that ZYLIA ZM-1 driver needs Microsoft Visual C++ Redistributable 2017 to work. If you have this packet already installed, the installation of it will finish with an error but the installation of ZYLIA ZM-1 driver will be finished successfully.



ZYLIA Studio

ZYLIA Studio is an application designed to work exclusively with ZYLIA ZM-1 microphone.

Main features:



- Audio recording
- Separation of individual sound sources
- Mixing of the recordings (level adjustment, panning)
- Storage and management of the recordings

Installation

Instruction

1. Close other applications
2. Download the ZYLIA Studio installer package appropriate for your operating system. Download link: <http://www.zylia.co/downloads.html>
3. Run the installer and follow displayed instructions

Windows users should be aware that ZYLIA Studio needs Microsoft Visual C++ Redistributable 2015 to work. If you have this packet already installed, the installation of it will finish with an error but the installation of ZYLIA Studio will be finished successfully.

MacOS 10.14 users during the first launch of application should allow ZYLIA Studio to use microphone.

Activation

ZYLIA Studio works in three modes:

- **Demo** – the user may check general application workflow without using ZYLIA ZM-1 microphone. Functions such as recording or separation are unavailable.
- **Trial** – all application functions are available for 30 days. The trial mode can be used once on the particular machine.
- **Activated** – unlimited access to all application features.

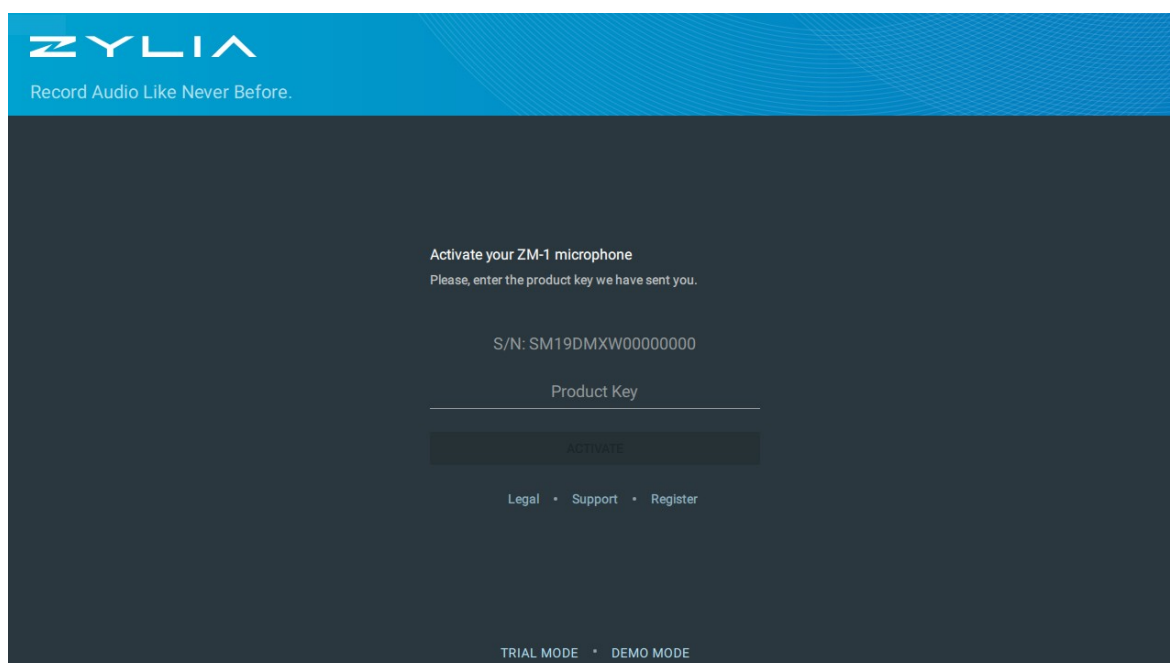


Activation process requires:

- ZYLIA Studio license key
- ZYLIA ZM-1 microphone connected to the computer
- Internet connection

To obtain the product key, the user must fill the registration form on <http://www.zylia.co/register.html>

After registration, you will receive an email with the product key.



Activation instruction

1. Plug ZYLIA ZM-1 to the computer
2. Launch ZYLIA Studio
3. Insert your product key
4. Click ACTIVATE

Deactivation

If you don't want to use the application on the particular machine anymore you can deactivate this copy. Click on the cog icon, choose *License* and click DEACTIVATE.



Sound input/output

ZYLIA Studio uses ZYLIA ZM-1 microphone as an input and default sound output chosen in your system preferences.

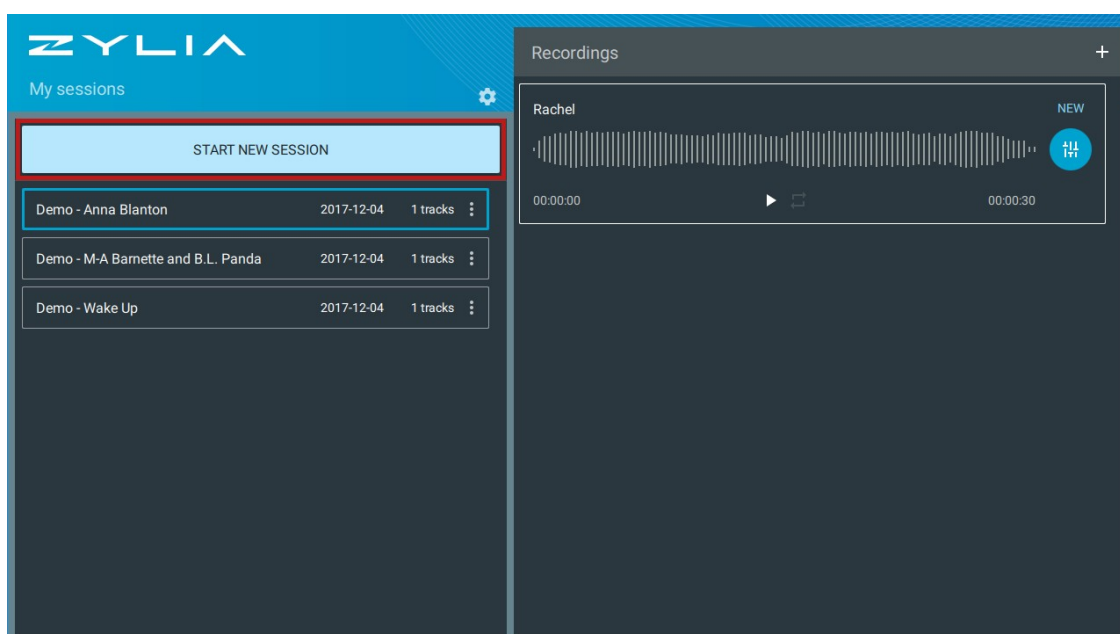
Calibration

The calibration process is required to identify the positions of the instruments. Separation is based on the location of instruments/sound sources in the space. If you want to obtain separated tracks after recording, it is recommended not to change the position of instruments during recording.

Calibration should be performed before every new recording session unless the position of the sound sources remains unchanged.

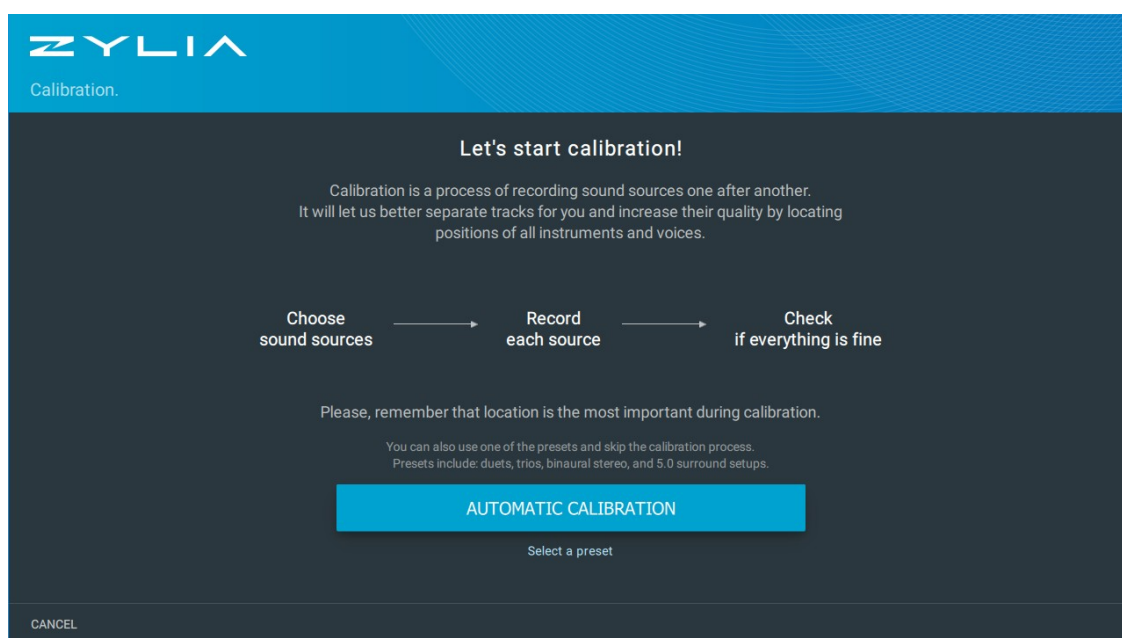
How to perform calibration?

1. Run ZYLIA Studio,
2. Click START NEW SESSION button,

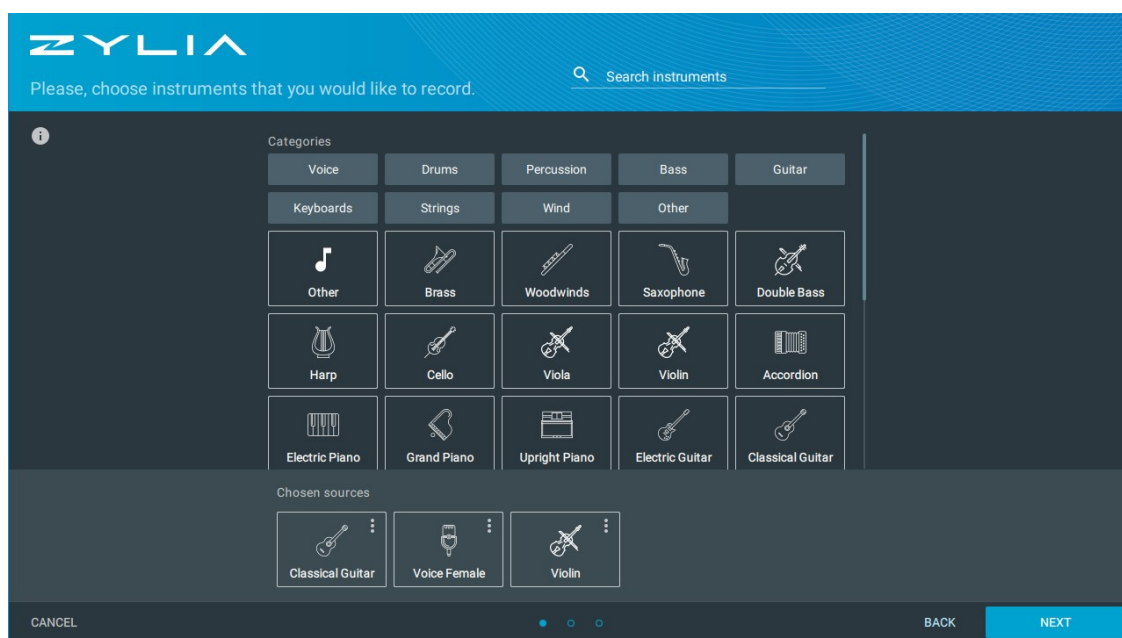


3. Screen with calibration instruction will appear – read it carefully.
On this screen you can choose between two options:
 - a) Automatic calibration
 - b) Selecting a preset (described later)



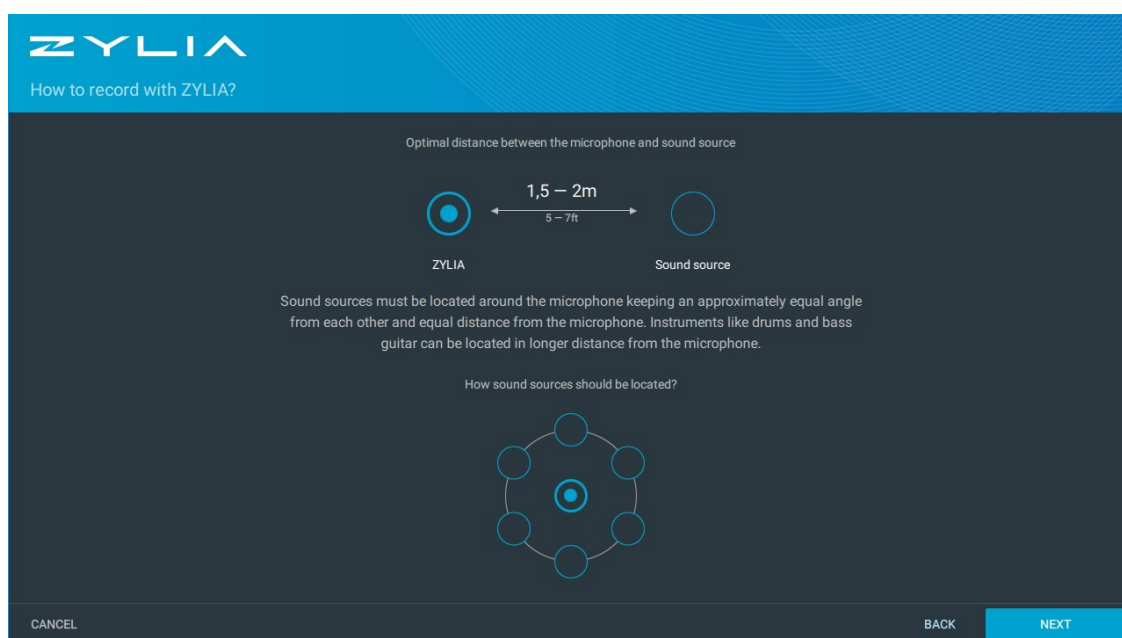


4. Click AUTOMATIC CALIBRATION button and choose the type of instruments /voices for calibration. You can rename sources by clicking on three dots and editing their names. Click the NEXT button.

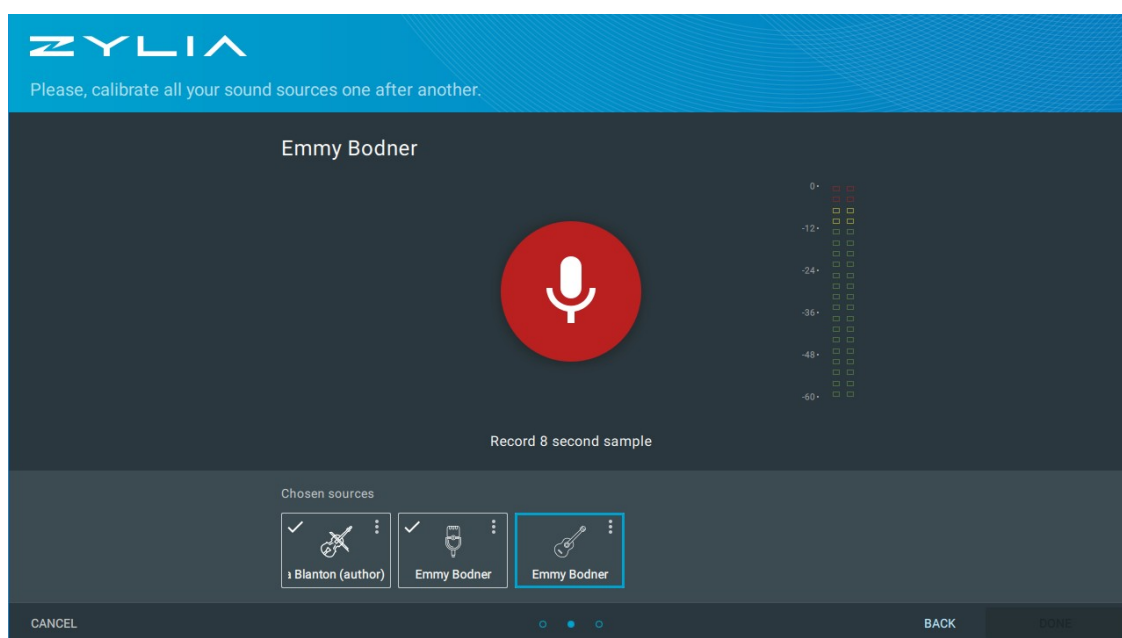


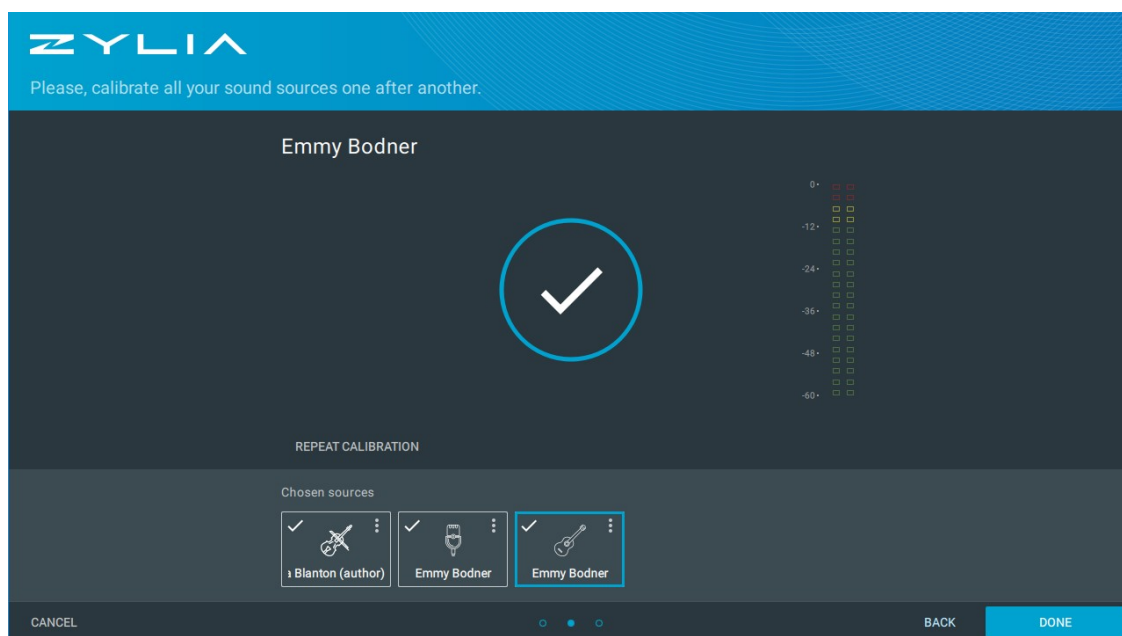
5. Please read the instructions on the distance between a sound source and the microphone. Click the NEXT button.



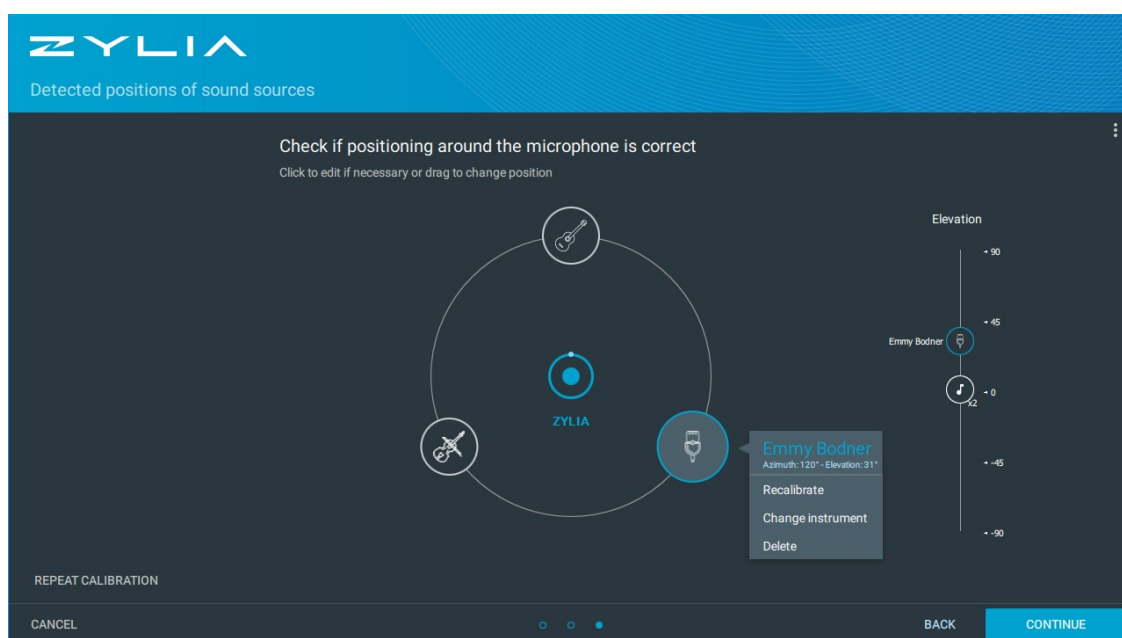


- Each instrument must play a short sound sample (8 seconds) which needs to be recorded. Based on that sample ZYLIA will identify the position of the instrument in the space around the microphone. Click on the red recording button to start calibration of each sound source.
All calibrated instruments will be marked with a check mark. Click on the DONE button.





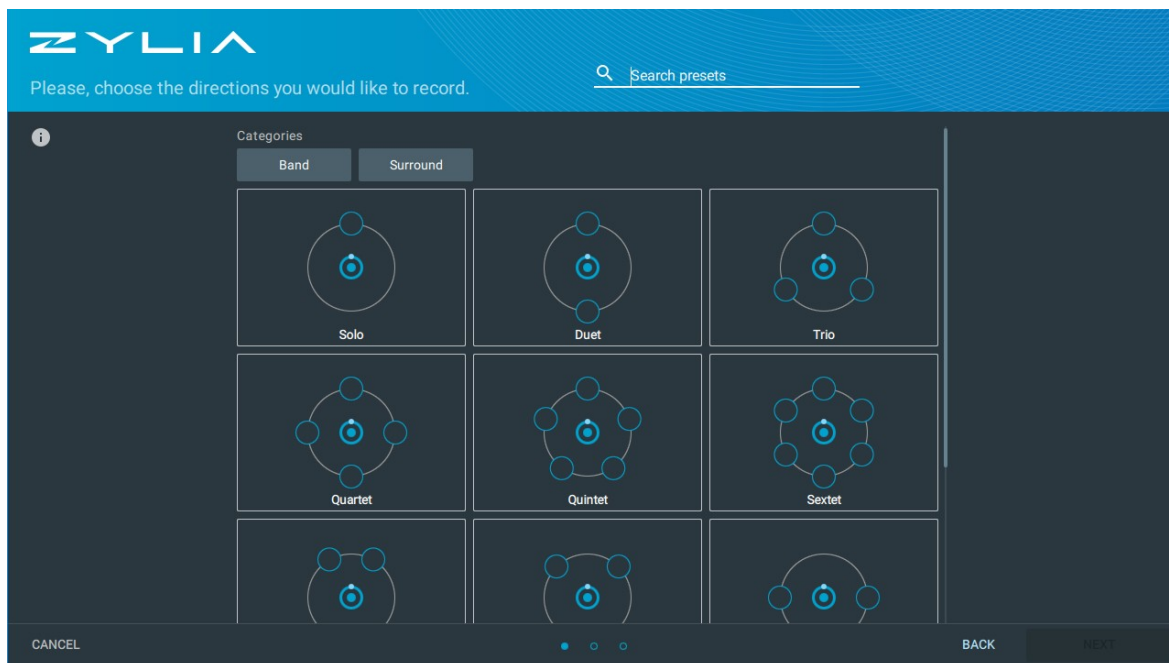
7. The result of the calibration process will be visible in a graphic form. If the position of a given instrument is not correct you can perform a recalibration. If each instrument (sound source) is placed correctly, press the CONTINUE button. You can also see the instrument's estimated elevation (a relative height between ZYLIA and the sound source) by clicking on the instrument's icon or displaying the elevation controls using the options menu in the upper right corner.



Presets

ZYLIA Studio comes with a set of presets – typical configurations of instruments. You can choose between:

- Band presets like solo, duet, quartet and
- Surround setups like 3.0, 5.0 or binaural stereo.



To use presets, click the *Select a preset* option. On the next screen, you can select a preset which will bring you to the last screen of the calibration process.

In Appendix A you will find a detailed description of the azimuth and elevation of ZYLIA Studio presets.

Recalibration

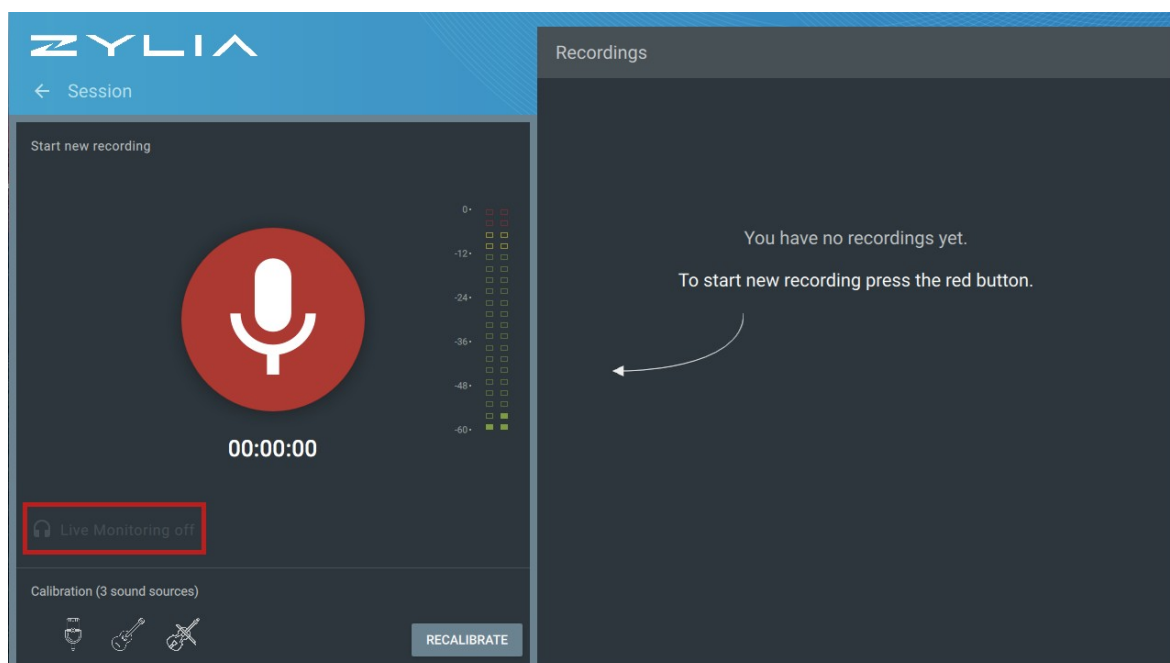
You can adjust the calibration by using the RECALIBRATE button in *My sessions* view. Clicking this button will bring you back to the calibration results screen, where you can adjust the position of the instruments or go back and add/remove additional sources.

Recording

After Calibration process, ZYLIA Studio is ready for recording. We recommend to turn off all other applications to ensure maximum audio quality. MacOS users should also disable Wi-Fi, Bluetooth, screen saver and option *“Put hard disk to sleep”* in their system preferences.

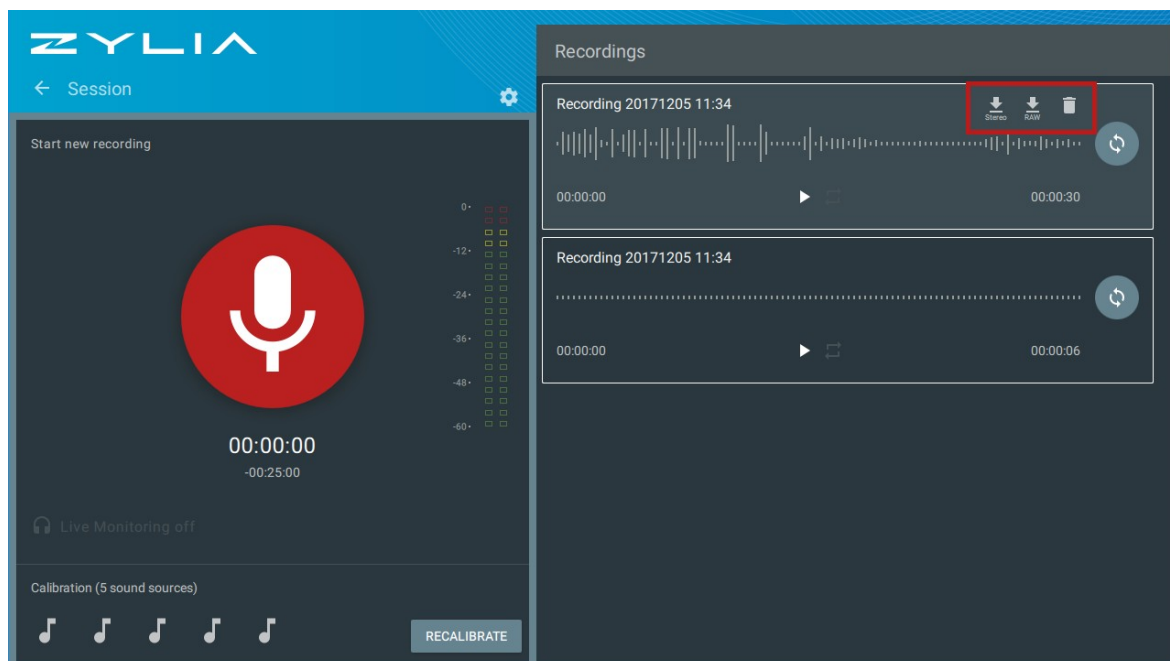
Press the red recording button on the left side of the screen to start recording. You can also enable *Live monitoring* option to listen a stereo preview of the sound captured by ZYLIA ZM-1.





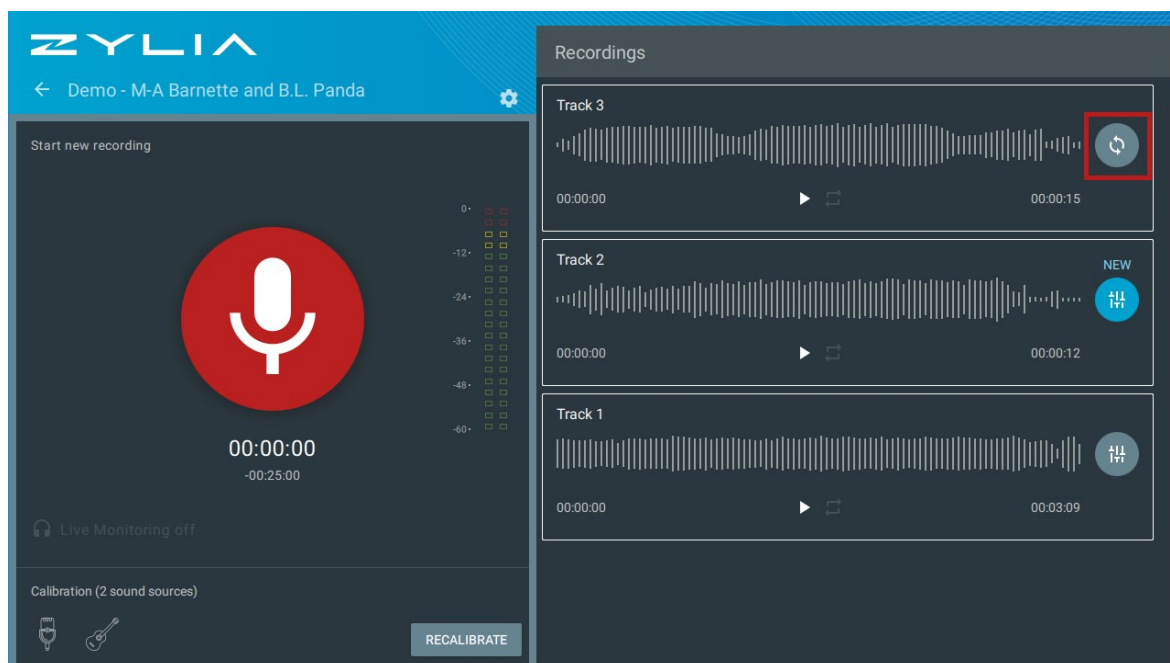
We recommend using headphones for live monitoring in order to avoid acoustic feedback.

Recorded tracks will appear in the right panel. You can listen the stereo preview of each track by clicking on the play button. You can also remove the track – hover over a recording and click on the trash icon.



Separation

After the recording is ready you can separate the tracks of instruments. To start the separation process click on the separation icon. Freshly separated tracks will be denoted with a *NEW* label.

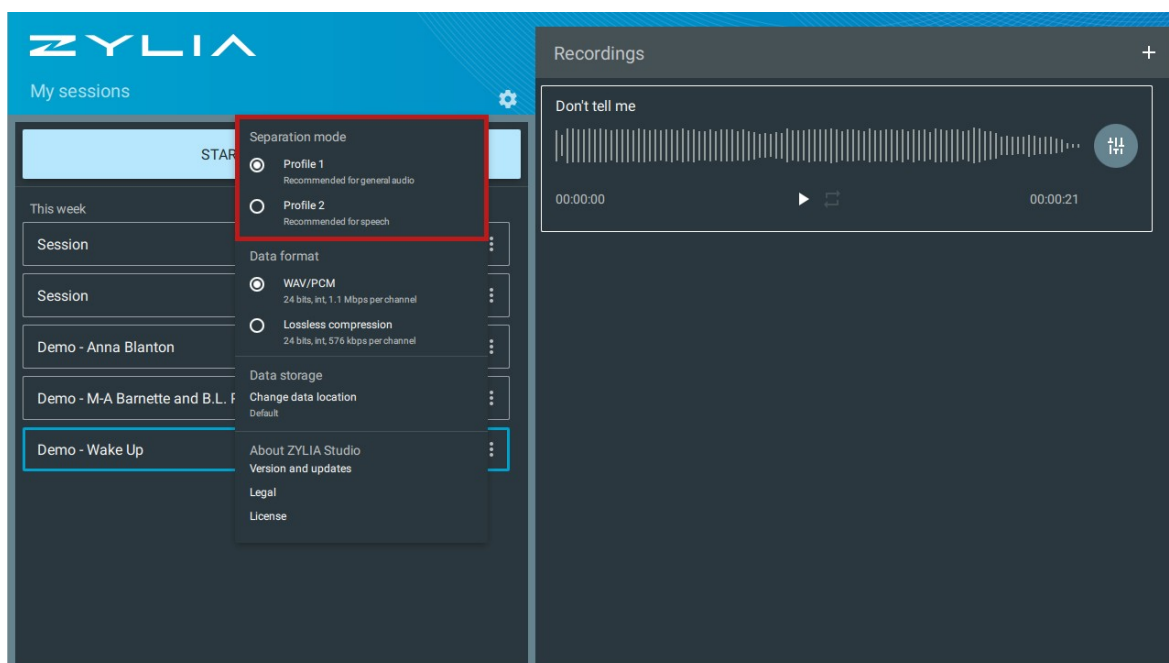


You can choose between two separation profiles in ZYLIA Studio:

- **Profile 1** – this profile is recommended for separation of musical sources. Beside separating sound for the particular instrument, it also cancels out sounds arriving from the other sound sources. Profile 1 results with full and genuine sound of the separated tracks with a minimized spill from the other instruments.
- **Profile 2** – this profile works as profile 1 with additional noise filtering applied to achieve higher signal to noise ratio. It is recommended for speech and results with stronger separation of the sources.

Depending on the desired result choose between the above profiles. You can set separation profile by clicking on the cog icon in *My sessions* view and recording view.

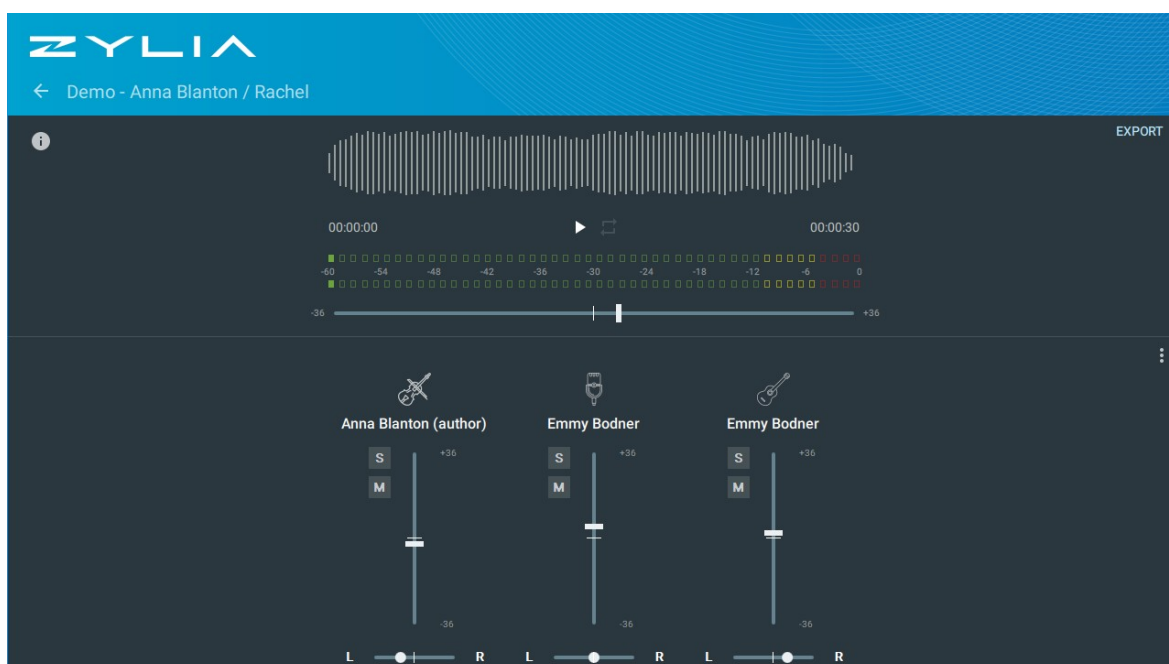




Mixing

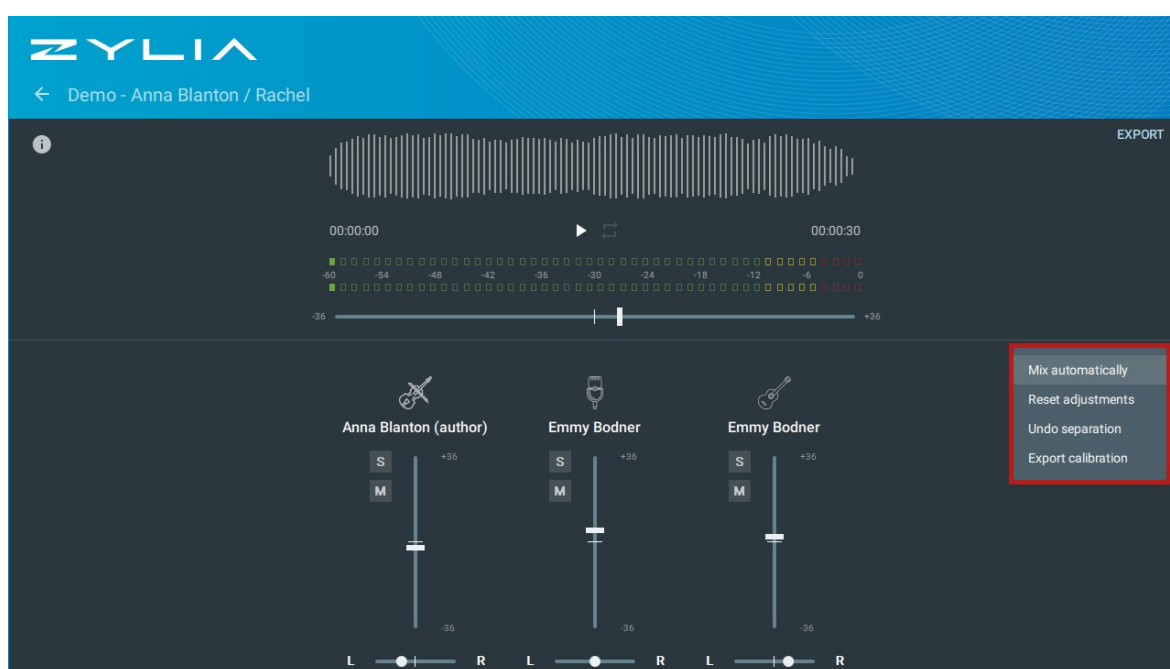
When separation process is finished you can go to the Mixer screen (mixer icon).

In the Mixer you will see a master mix – at the top, and separated tracks of instruments – at the bottom. You can freely change the volume and panning of tracks. You can mute (M) or leave solo (S) track. All changes will appear in the master mix. You can also change the volume of the master mix.



Additional options can be found in the mixer's menu (three dots).

- **MIX AUTOMATICALLY** – ZYLIA algorithm will adjust levels and panning of the separated sound sources,
- **RESET ADJUSTMENTS** will reset all sliders to their neutral (zero) positions including the master gain slider,
- **UNDO SEPARATION** will permanently delete the separated tracks. You can repeat the separation process later using different calibration settings or different separation mode,
- **EXPORT CALIBRATION** will export *.zspro file with calibration settings used in the current session. Calibration file may be used later in ZYLIA Studio PRO.



Exporting

Sound files export

Export of the recording is available from *My sessions* view and from *Mixer* view.

Following options are available:

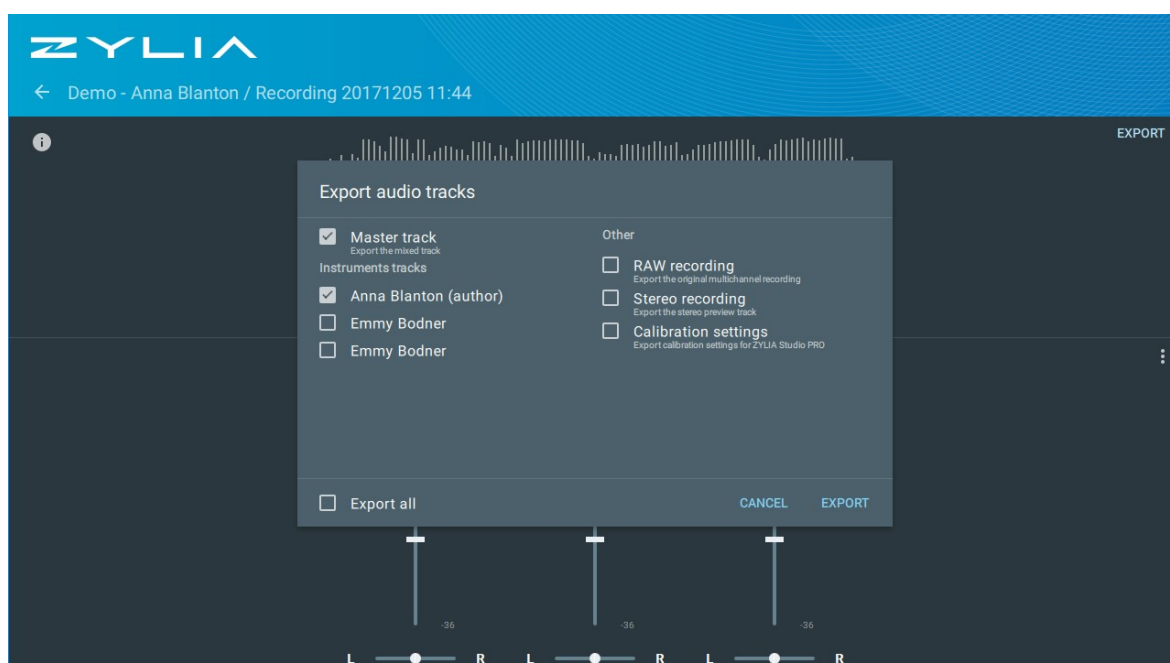
- **Master track** – stereo WAV file of mixed sources
- **Instrument tracks** – mono WAV files of separated sources
- **WAV/WavPack recording** – raw 19-channel file in WAV or WavPack format
- **Stereo recording** – stereo preview WAV recording
- **Calibration settings**

To export from *My sessions* view:

1. Hover mouse over track you want to export
2. Choose between RAW and Stereo recording
3. Select a folder and save your file.

To export from the *Mixer* view:

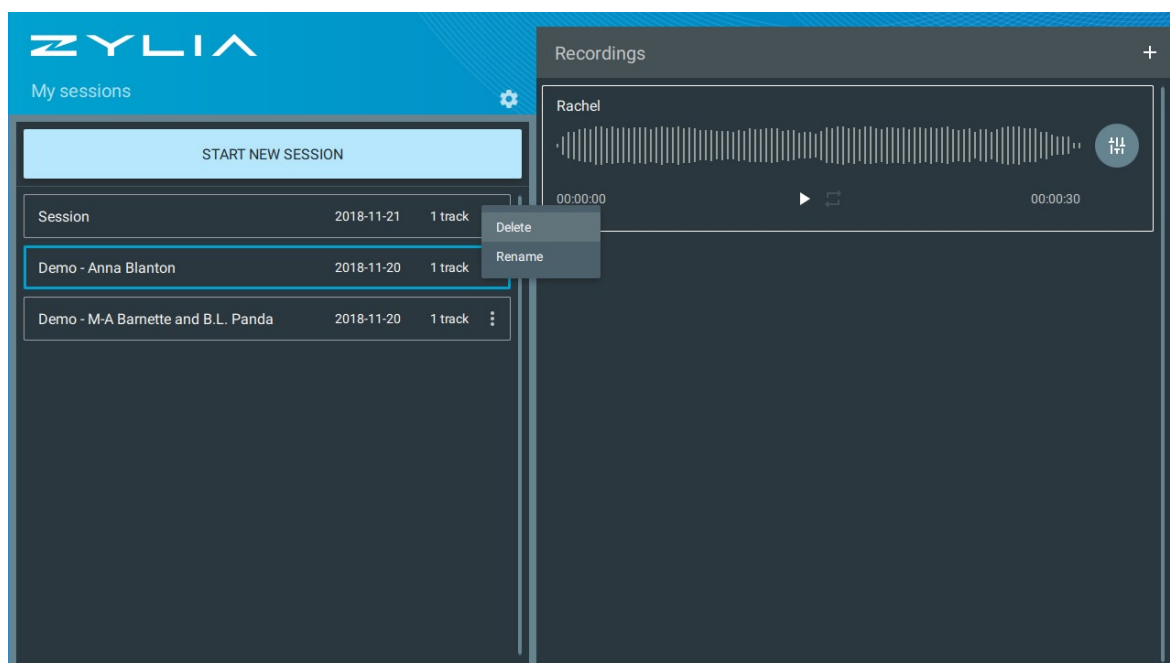
1. Click on the EXPORT button
2. Select which type of the recording you want to export (you can select multiple options)
3. Choose a folder and save the file



Sessions management

In the *My sessions* view you can manage your recording sessions – rename or delete them. To change the name or delete your session click on three dots and choose the desired option.

You can also rename your session by clicking on its name.



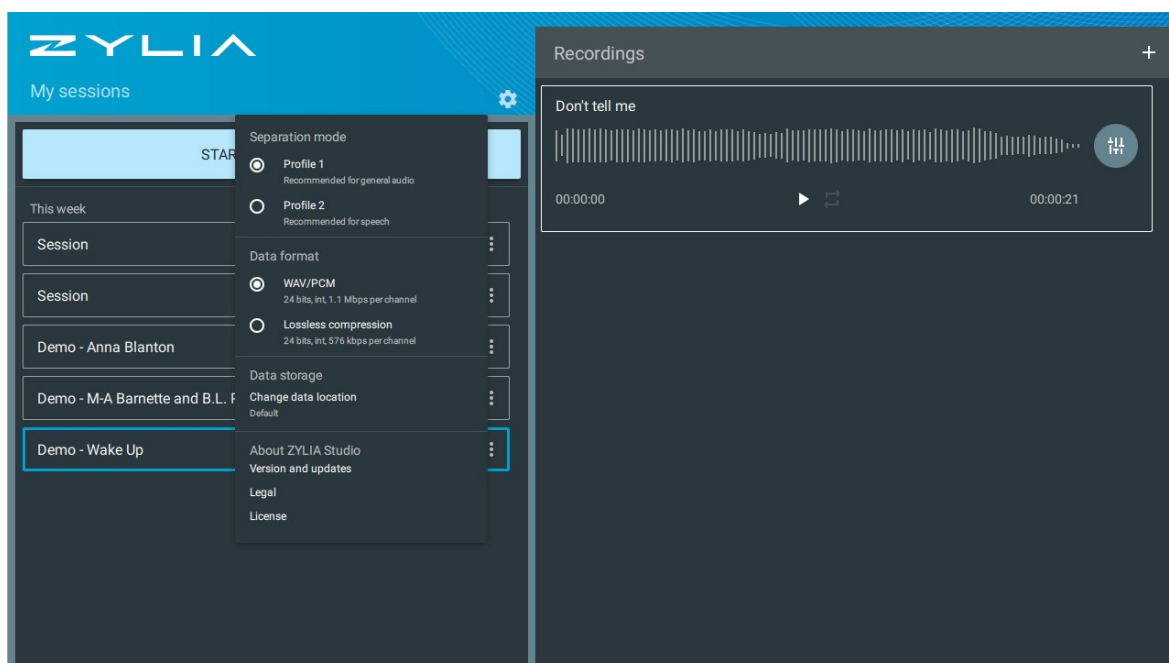
Application settings

Application settings are available under the cog icon. You can set up:

- the separation mode,
- the data format,
- the data storage.

You'll find there also information about your license, the application version and the End User License Agreement (EULA).





Separation mode

Please refer to the section *Separation* in this document.

Data format

ZYLIA Studio uses two formats of audio files:

- Uncompressed WAC/PCM (*.wav) – 1.1 Mbps per channel, duration of a single take is limited to the 25 minutes,
- Lossless compression WavPack format (*.wv) – 576 kbps per channel, unlimited duration of a single take.

Due to WAV size file limitation you can record approximately 25 minutes using ZYLIA ZM-1 in this format. If you want to record a longer session choose *Lossless compression* option.

Data storage

Under this option, you can define the desired location for your recordings. After changing data storage location the application will restart automatically.

ZYLIA Studio will display four last data locations used.

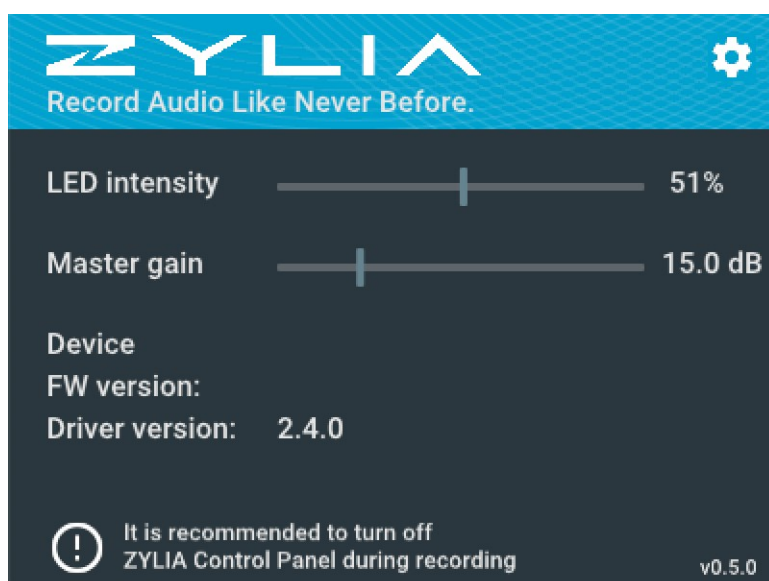


ZYLIA Control Panel



ZYLIA Control Panel is an application designed for better control over ZYLIA ZM-1. Thanks to it the user is able to dim or even turn off the LED, check the device model and the firmware version. ZYLIA Control Panel is installed automatically during ZM-1 driver installation*.

* ZYLIA Control Panel availability depends on the operating system and ZYLIA ZM-1 driver version.



Gain control

Gain control is the ZYLIA ZM-1 driver feature which allows you to adjust the digital gain of ZYLIA ZM-1 signal. You can set it in ZYLIA Control Panel as well as in your OS facilities.

How to use it?

1. Open recording application
2. Check the sound level of the loudest sound source
3. Adjust gain of ZYLIA ZM-1 to the desired level – remember to leave some headroom to avoid clipping. You can set it in:
 - ZYLIA Control Pan using the slider
 - Audio MIDI Setup application
4. Start your recording session.



We do not recommend changing the gain of ZYLIA ZM-1 during recording.

ZYLIA ZM-1 driver support data export

To export ZYLIA ZM-1 driver support data:

1. Open ZYLIA Control Panel
2. Click on the cog icon → *Support data*
3. Choose file location

You may be asked to insert your password during export.



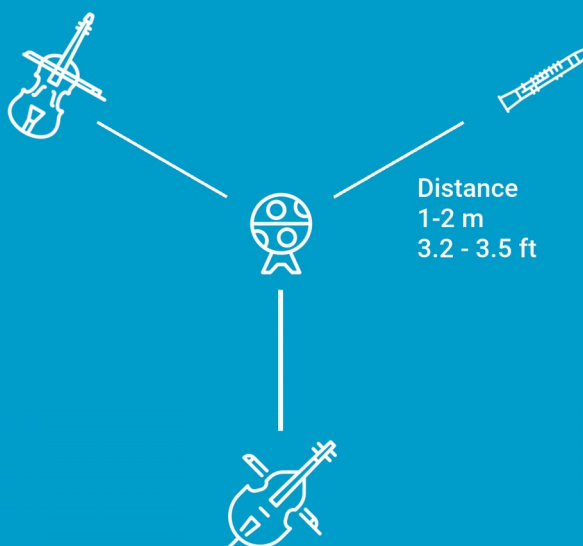
Instrument placement recommendations

To fully benefit from using ZYLIA Portable Recording Studio you are recommended to adjust the placement of instruments during a rehearsal. Below we present a few examples of good practice when recording with ZYLIA.

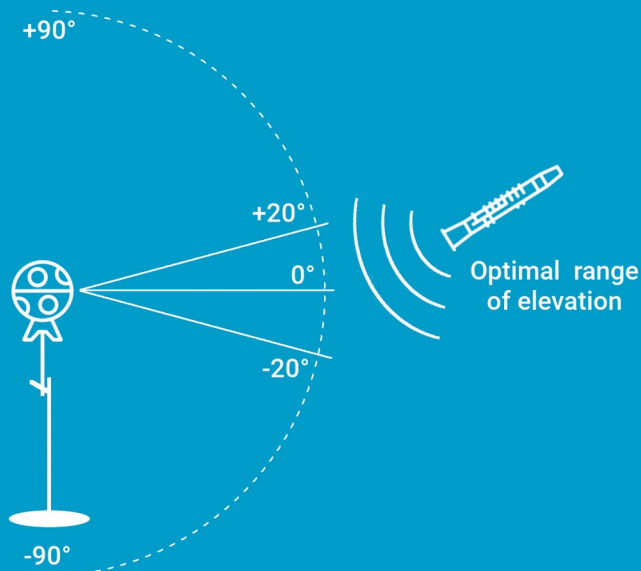
Location

Sound sources (acoustic instruments, vocalists) must be located around the microphone keeping an approximately equal angle from each other and usually equal distance from the microphone. It is also advisable to locate sound sources in the optimal range of elevation. Sometimes it is good to check two or three different placements and choose the best one.

Even angle between sources



Elevation



Distance

To avoid signal distortion from the microphone, it is recommended to place the ZYLIA microphone at a larger distance from a full drum set or loud instruments, 2-4 meters (6-13 ft). The appropriate distance can be tested by the user during test recordings. Signal distortion from the microphone can be monitored on the level meter in ZYLIA Studio.

Sound sources with lower signal levels than other should be located closer to the microphone.



Do not place the ZYLIA microphone directly on the ground, it is recommended to put it 1 m (3 ft) above the ground on a microphone stand. However, you can experiment with the set-up to achieve the best results.

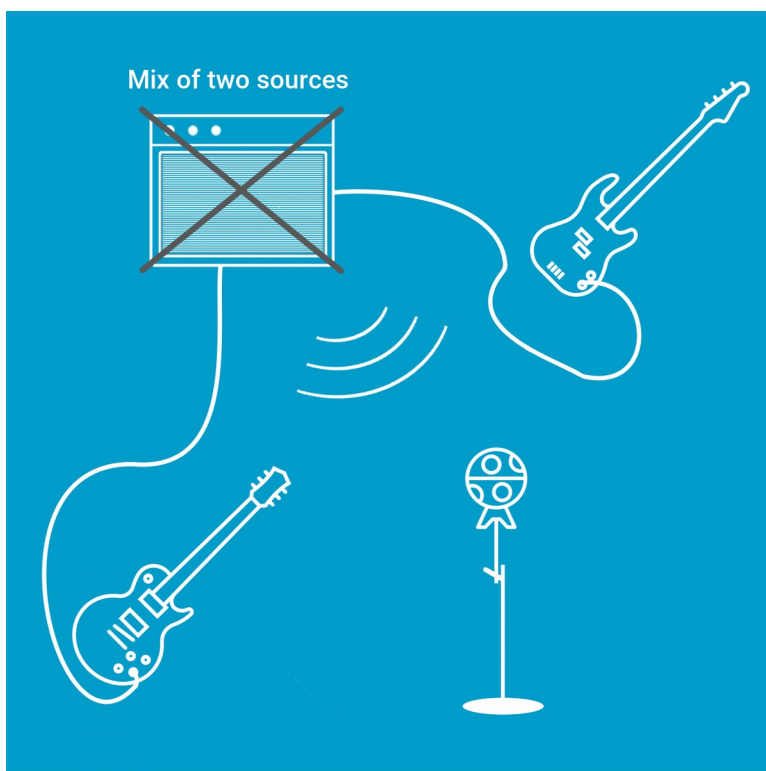
Recording with amplifier

Do not use the same amplifier/loudspeaker for two sound sources. You will not be able to separate tracks of those sound sources.

Recording of a single performer

If you want to record a single performer which is both playing on the instrument and singing at the same time, you should take it into account during calibration stage. In such a case you should calibrate two sources: an instrument and the voice. Make sure that your sources differ in elevation.

We recommend to place a single performer closer to the microphone (<0.5 m), thanks to that the elevation difference between sound sources will be higher.



Troubleshooting

Important

The Users are not allowed to make repairs of ZYLIA ZM-1 on their own. All repairs must be done in the service authorized by Zylia.

Device is not lighting

Your device is disconnected from a power supply (USB) or the LED ring dimming value is set to maximum.

No light on the microphone may also be caused by using a USB cable which is too long. You should only use the USB cable provided with ZYLIA Portable Recording Studio.



ZM-1 is not detected by ZYLIA Studio.

If after plugging ZYLIA ZM-1 to the computer the device is not detected by ZYLIA Studio, make sure that:

- The correct ZM-1 driver is installed
- You have changed your privacy and security settings (macOS)
- You have the restarted system after driver installation

Then check the connection using different USB ports and another USB cable. If the device is still not recognized by ZYLIA Studio, contact ZYLIA Support.

Error appears during driver/application installation (Windows)

ZYLIA software needs Microsoft Visual C++ Redistributable libraries to work. If you have those packets already installed, the installation of it will finish with an error but the installation of ZYLIA Studio will be finished successfully.

If you experience a different error during installation, please contact support@zylia.pl

I'm not able to allow ZYLIA ZM-1 driver to be load (macOS)

Other applications running during installation process may cause inability to change Privacy & Security settings on your computer (especially Google Chrome or VLC media player). If you already finished installation of ZM-1 driver and you were unable to change preferences you should uninstall the driver using this [deinstaller](#) and install it again with other applications closed.

Processing and separation of tracks takes very long to complete

Processing of a recorded file can take some time if the recording is very long. It is recommended to split your recordings into short fragments, individual songs. A single recording should not be longer than one hour. The processing time depends also on the CPU capabilities of your computer. The uncompressed WAV/PCM format is limited to approx. 25 minutes in length after which ZYLIA Studio will create a new recording and continue to capture the sound. Please note that there might be a short pause between stopping the previous recording and starting the next one.

There is no recording in one of the channels

When recording to DAW, if you notice that there is no recording in one of the 19 channels, then one of the microphone capsules might be damaged. Please, contact ZYLIA Support.

Signal clipping

Signal clipping may appear during sessions with very loud sources. If you notice distortion in your recording you should put the loudest sources in the greater distance from the microphone. Use the meter in ZYLIA Studio to monitor input signal level.



Glitches in the recorded signal

The most common reason for glitches in audio is an inappropriate operating system configuration.

To ensure a maximum computer efficiency you should:

- Disable all energy saving options (e.g. screen saver, sleep of the hard disk)
- Disable Wi-Fi and Bluetooth – some of the computers have those devices connected with USB buses, therefore they may affect USB data transfer
- Record with computer plugged to the power supply

Support

In case of any technical problems please check our online support center at www.zylia.co/support.

If you have any questions regarding the recording process or instrument placement and you cannot find the answer on the website, please contact support@zylia.pl. Additional information on this product and answers to frequently asked questions can be found at www.zylia.co.

The most up to date version of this manual is available online at www.zylia.co/downloads.html

Support data export

To export support data:

1. Open ZYLIA Studio
2. Click on the cog icon in *My sessions* view
3. Select *Version and updates* and click SUPPORT DATA button



Technical specification

System requirements

- 64-bit Intel system
- Operating system:
 - macOS X 10.9 to the latest
 - Linux Ubuntu 16.04
 - Windows 7, 10
- Minimum 2 GB RAM
- 2 GB of free space for ZYLIA Studio installation

Additional space will be required to store recorded files (25 minutes of recording made using ZYLIA ZM-1 in WAV format occupies approximately 4 GB).

ZYLIA ZM-1 device specification

General

Number of microphones		19
Dimensions (including stand)	height	155 mm (6.1")
	length	103 mm (4")
	weight	470 g (16.6 ounces)
Connection with computer		USB 2.0 (type A) to microUSB 2.0 (type B)
Supply voltage		5 V DC
Current and/or power		max. 0.5 A 2.5 W 0,15 – 0,26 A (+/- 0,01 A)

Microphones specification

Frequency range	20 – 20 000 Hz
Dynamic range	105 dB
Signal to noise ratio (SNR)	69 dB(A)
Total harmonic distortions (THD)	<1% up to 128dB SPL
Acoustic overload point	130 dB SPL
Directivity	omnidirectional
Noise floor	-105 dB FS(A)

A/D conversion

Sample rate	48 kHz
Bit resolution	24-bit



Product safety and conformity

Safety precautions

Handle the microphone with special care, avoiding sudden shocks such as dropping or hitting into other objects.

Do not tap the microphone patches to check if they are working. Do not blow into the microphone patches to check if they are working. The LED ring indicator will show the current status of the microphone.

Water / humidity / temperature

To reduce fire or shock hazard, do not expose the unit to rain, moisture or high temperatures.

Cables

Use the attached USB cable for proper usage.

Repairs

All repairs may be performed only by the authorized service. The user is not allowed to repair the device himself.

Notice

If static electricity or electromagnetism causes data transfer failure, restart the application or disconnect and connect the USB cable.

This product has been tested and found compliant with the limits set out in the EMC regulation for using cables shorter than 3 meters.

Electromagnetic fields at the specific frequencies may influence the sound quality of this device.



Conformity statements

United States of America

The FCC regulation warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.



European Union



This device is classified as an electronic equipment.
Do not throw to household waste when discarded.
Check local regulations for electronic equipment disposal.



Warranty and legal

Manufacturer information

Company headquarters:

Name: Zylia Sp. z o.o.
Address: Umultowska 85
61-614 Poznań
Poland
Telephone: 0048 61 279 40 44
Email: record@zylia.pl

Warranty Information

ZYLIA's hardware products are covered with warranty against defects in materials and workmanship under normal use for a period of ONE (1) YEAR from the date of purchase by the original end-user purchaser ("Warranty Period").

During this warranty period, if a defect arises, and you follow the instructions for returning the product, we will apply one of the following options:

- repair the product using either new or refurbished parts,
- replace the product with a new or refurbished product,
- refund the purchase price of the product.

A replacement product assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you.

This warranty applies only to hardware products manufactured by or for ZYLIA that can be identified by the ZYLIA trade name, serial number, and logo affixed to them and which are sold through our official sales channels.

This warranty does not apply to:

- normal tear and wear and cosmetic damage, including but not limited to scratches and dents;
- defects or damage caused by misuse, accident (including, without limitation, collision, fire and the spillage of food or liquid), neglect, abuse, alteration, unusual stress, modification, improper or unauthorized repair, installation, wiring or testing, improper storage, use in an unapproved device or if the serial number has been removed;
- damage caused by using the product outside the permitted or intended uses described by ZYLIA;



- any non-ZYLIA hardware products or any software, even if packaged or sold with ZYLIA products.
- modifications of the products' firmware or software by anyone other than ZYLIA. ZYLIA reserves the right to disable products if ZYLIA suspects fraud or if ZYLIA determines that the products are counterfeit, stolen or lost in shipment.

ZYLIA does not warrant that the operation of the products will be uninterrupted or error-free. ZYLIA is not responsible for damage arising from failure to follow instructions relating to the use of the products.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM JURISDICTION TO JURISDICTION. ZYLIA's RESPONSIBILITY FOR HARDWARE DEFECTS IS LIMITED TO REPAIR OR REPLACEMENT SERVICE AS DETERMINED BY ZYLIA AT ITS SOLE DISCRETION. ALL EXPRESS AND IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN TIME TO THE TERM OF THIS LIMITED WARRANTY. NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE EXPIRATION OF THE LIMITED WARRANTY PERIOD. SOME JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THIS LIMITATION MAY NOT APPLY TO YOU.

To obtain warranty service for any product that is subject to the foregoing warranty, you must notify ZYLIA and return the defective product together with the proof of purchase to the address specified by ZYLIA.

No warranty in case of damaged content or recording failure

ZYLIA cannot provide a guarantee in the case of failure to record or loss or damage of recorded content due to a malfunction of the microphone or recording software, etc.

Warning on copyright

Music, performances and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provisions of the copyright laws.



Appendix A – ZYLIA Studio presets

Band presets

Virtual microphones in Band presets are evenly distributed around ZYLIA ZM-1. The name of preset refers to the number of microphones (e.g. **Solo** – 1 virtual microphone, **Quintet** - 5 virtual microphones).

Surround sound

Those presets are prepared for surround playback. Channel positions are defined based on the NHK 22.2 documentation.

Stereo Narrow		
Channel name	Azimuth	Elevation
Front Left Center	30	0
Front Right Center	-30	0

Stereo Wide		
Channel name	Azimuth	Elevation
Front Left	45	0
Front Right	-45	0

Stereo Binaural		
Channel name	Azimuth	Elevation
Side Left	90	0
Side Right	-90	0

3.0 Surround		
Channel name	Azimuth	Elevation
Front Center	0	0
Left Surround	110	0
Right Surround	-110	0

4.0 Quadrophonic		
Channel name	Azimuth	Elevation
Front Left	45	0
Front Right	-45	0
Back Left	135	0
Back Right	-135	0



5.0 Surround		
Channel name	Azimuth	Elevation
Front Center	0	0
Front Left Center	30	0
Front Right Center	-30	0
Left Surround	110	0
Right Surround	-110	0

