ARC 4

Advanced Room Correction Software

USER MANUAL

IK MULTIMEDIA

Table of Contents

Contents

ARC 4

Contents

License Agreement

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1. IK Multimedia Production S.r.l. (or its authorized distributors and vendors) grant the User a license for use:

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    - Non-transferable (even in part or by sublicensing it free of charge, subject to the provisions of Article 9 below);
    - Non-marketable (does not grant the user rights of economic exploitation);
    - Without Territorial Restriction (Worldwide)

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2. The User is informed and agrees that some content included in the Product may belong to third parties and may be protected by copyright or other intellectual property rights of third parties.

Art. 2 - How to acquire the installation program

1. In order to be able to use the Product, the User must run an installation program on his or her Devices that copies the application and, in general, the audio content.

2. The User may acquire the installer using one of the following methods, as example but not limited to:

a) by purchasing the Product online on the IK Multimedia website (https://www.ikmultimedia.com/products) or from third-party as resellers authorized by the Licensor;

b) by purchasing a physical medium from an authorized retailer in the shop (by delivery of universal serial bus support in the form of USB);

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d) downloading it free of charge from the Licensor's user area (https://www.ikmultimedia.com/userarea), either because it is included as a free gift with the purchase of an IK Multimedia hardware product, or because it is made available free of charge by the Licensor to partners or artists: in this case, these are NFR (Not for resale) licenses that, although they have all the features of ordinary user licenses, do not allow the accumulation of loyalty points and do not give the User discounts for the purchase of new versions (upgrades or crossgrades);

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3. Irrespective of the manner of acquisition of the installation program and type of license for use, the User accepts these EULA as a binding agreement between the parties.

4. The Licensor, for the entire duration of the license grant, reserves the right to modify, update, replace this EULA or any part thereof, without exception.

5. The User shall be obliged to verify and accept (or not accept) the new terms and conditions, considering that only the acceptance of this EULA permits the use of the Product.

Art. 3 - Duration of the license

1. The duration of the utilization license depends on the type of license chosen by the User, namely:

a) 30-year license: Thirty-year license: through the purchase of the 30-year user license grant, the User, with a lump sum payment is entitled to use the Product pursuant to Article 1 above for the entire mentioned period. The same term shall apply to the Product that is licensed for NFR use.

Any further temporal extension of the utilization license shall in any case be expressly agreed upon with the licensor.

b) Periodic Subscription License: through the purchase of the periodic subscription license the User, with deferred or lump sum payment, is entitled to use the Product pursuant to Article 1, as written above, for the limited period of time as specifically selected in the subscription profile purchased by the User, which, depending on the case, may be of monthly or annual duration (or in any case referring to the different period specifically provided for in the periodic subscription plans that will be eventually updated by the Licensor).

Use of the Product with a periodic subscription license requires the computer on which it is authorized to be connected to the Internet and able to communicate with the IK Multimedia servers, in order to perform an authorization check to confirm that the subscription is still active. User may use the Product offline for up to 3 days before another authorization check is required. If the Product is unable to communicate with IK Multimedia servers for a period of more than 3 days, the functionality of the Product will be revoked or limited until communication with the server is re-established.

c) Demo License: granted free of charge for a limited trial period of ten (10) days for demonstration and promotional purposes only. After this period, the Licensor reserves the right to limit and/or revoke all or part of the use and functionality of the Product.

2. The rights of use of the license shall start on the day following the day on which the purchase is completed or the Product is made available to the User, this being understood it means the day on which Licensor or its authorized distributors have made the installation program available to the User in the manner and on the terms set out in Art. 2, regardless of the actual installation of the Software by the User (hereinafter the Effective Date).

Art. 4 - User profile registration and authorization

1. Regardless of the type of license purchased or granted, with the exception of the "DEMO License", the User is informed and accepts that the operation of the Product is conditional on the completion of the registration and authorization procedure by the Licensor (or its authorized distributors and vendors).

2. The registration and authorization procedure must be carried out by the User by accessing the Licensor's website (https://www.ikmultimedia.com/userarea/) and is described in the Software within the documentation under User Manual.

3. The User, under his or her own civil and criminal legal responsibility, certifies that the data entered when registering the user profile (digital identity) are consistent with the User's data (real identity).

4. The User's identification data collected by the Licensor shall be used for the purpose of executing the agreement and shall be processed for the purposes and in the manner described in detail in the section "Information on the processing of personal data" available on the Licensor's website (https://www.ikmultimedia.com/legal/index.php?R=privacy&PSEL=privacy).

5. IK Multimedia Production S.r.l. reserves the right, at its sole discretion, to deny the activation of the user profile in the following non-exhaustive cases:

- incomplete or conflicting personal information;
- insertion of manifestly inconsistent data;
- suspicion concerning the minor age of the User;
- violations by the User, including past violations, of the Licensor's EULA.

Art. 5 - Installation limits

1. The granting of a license for use of the Product confers an individual right of use associated with the registered user profile, for the general rule can be summarized as follows: "Each User corresponds to one license for use", which corresponds to a personal serial number of the User.

2. The Product, as well as its previous versions for the same operating system, may be installed on a maximum number of three (3) Devices provided that

- the Devices are owned by or otherwise in the material and legal possession of the Licensee;
- the Product is not used simultaneously on more than one Device by different end users;
- the User, before assigning or otherwise transferring to third parties rights, for any reason whatsoever, to the Devices in which the Product is installed, must ensure that he/she has uninstalled each of its components, in order not to unlawfully assign to third parties the resulting rights of use.

3. The User is entitled to store or install a copy of the Product in a storage device such as a network server, which is only used to install and/or to activate the Product in further Devices on an internal network, however, in such cases, the User is obliged to purchase a multiple license for each end user of the Product by the shared storage device.

4. Violation of the aforementioned limitations implemented in any manner entitles the Licensor to terminate the user license agreement and, in any case, to demand payment of the amount corresponding to the effective number of end-user according to the "one User one license" rule.

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1. If the User has opted for the purchase of the license through a periodic subscription, for a limited period, the duration of which depends on the choice made by the User at the time of purchase, the User's rights to the license for use of the Product shall cease immediately and without deferment on the expiry date of the subscription period.

2. The User is specifically informed that upon expiration of the subscription period, the User does not retain any right to use the Software, including the latest version released prior to expiration and that the Licensor does not make any archiving of the content developed by the User through its use, so the User is solely responsible for saving and archiving the content on its Devices prior to the date of termination of the subscription period.

3. The periodic subscription shall be for the duration specified in the subscription profile and shall be automatically renewed on expiry of the subscription for an equal period.

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5. If the User does not wish to renew the subscription, the User shall have the burden of giving express notice of termination to the Licensor through an ad hoc procedure entirely online available at the following address: https://www.ikmultimedia.com/userarea, respecting the notice period of 24 hours prior to the periodic renewal, depending on the duration of the subscription.

6. The User, when purchasing the periodical subscription, may choose between several secure payment methods: e.g. bank account (direct debit); credit/debit card or through dedicated third-party services.

7. Where the payment method chosen by the User provides for service and/or management and/or intermediation by third parties, the User shall abide by the terms and conditions set forth therein, excluding any liability on the part of the Licensor in concluding and managing the contractual relationship with the third parties.

8. Payment of the periodic fee will be charged to the User by the due date of the invoice issued, in the manner chosen by the User at the time of purchasing the subscription license.

9. The User undertakes, without delay, to amend and update in his User area on the Licensor's website any changes made, without exception, that alter the data and payment method declared at the time of purchase.

10. Should the User fail to pay the periodical fees on time, the Licensor shall be entitled to suspend the User's profile as a precautionary measure.

11. After three (3) days have elapsed without the User having regularized his debt position, the Licensor shall be unilaterally entitled to terminate

the license agreement without further notice, without prejudice to the compulsory recovery of the debt.

Art. 7 - Music Content Library (Sound Library) Special License Conditions

1. The Product may contain a 'library of musical content', sounds or audio samples (sounds and samples) that are created by musicians and experts, or sound professionals.

2. Licensor makes the "music content library" available to the User for commercial and non-commercial purposes for music audio production, public performances, broadcasting and similar uses, as a component of the Product, by virtue of a lawful and binding agreement with the copyright holders.

3. The User is hereby informed and agrees that the redistribution of the Product and, in particular, the "music content library" and its derivatives, is strictly prohibited in any form whatsoever, including but not limited to: resampling, mixing, filtering, processing, isolating or incorporating it into any software or hardware.

4. The sounds/audio samples contained in the Product, may not be modified and resold as new audio samples within new sound libraries or "on a standalone basis" meaning "single sample not included in a library" of any kind or nature.

5. The User is informed and accepts, that the particular license conditions of the "music content library" expressed herein constitute an integral and substantial part of this EULA.

Art. 8 - Express prohibitions of use addressed to the User

1. The User is not authorized, directly or indirectly, to:

   a) sell, rent, lease, license or sublicense, distribute, market, otherwise exploit the Product or any of its components, for commercial purposes or free of charge;
   b) redesign, decompile, disassemble, adapt, reproduce the Product, in whole or in part;
   c) create, use, and/or distribute computer programs such as "crack," "keygen," or other "cheat" or "hack" programs or Software applications for this Product;
   d) remove, alter, disable or circumvent any copyright or trademark indications or other commercial information about the origin of the Product;
   e) transfer to third parties and/or export the license for any reason whatsoever (without prejudice to Section 9 below);
   f) use the program in violation of copyrights and/or intellectual property rights reserved by national and international laws and regulations for third parties;
   g) use the Program in violation of civil, criminal and administrative rules and regulations, including those of the User's place of business or residence;
   h) use the Program causing contractual or non-contractual damage to third parties;
   i) violate the license conditions of the "music content library" referred to in Article 7 above.

2. Any breach of the aforementioned prohibitions committed by the User shall entitle the Licensor to terminate the user license agreement immediately and without delay for breach, without any obligation to refund the consideration.

3. In any case the User shall be held liable and shall indemnify the Licensor against all claims, proceedings and disputes for which the Licensor is held liable as a result of negligence, omissions, violations, offences howsoever committed, which are caused by the User's willful and/or culpable act in using the Product.

Art. 9 - License of use allowing transfer to third parties

1. Given the general prohibition against transferring the license of use to third parties either for consideration or free of charge, Licensor by virtue of an express purchase option may grant Licensee the purchase of a "transferable license of use" by accessing Licensor's website directly: https://www.ikmultimedia.com/products/index.php?R=SHOPSEARCH&Q=Credit.

2. Each "transferable use license" purchased can be used to transfer the license of only one Product and only once.

3. In such a case, the User shall only transfer and/or make the Product available to third parties under the following conditions:

   a) the Product shall be transferred as original with all media and licenses and everything thereon;
   b) the User who transfers the license of use to another User shall not retain any copy of the Product;
   c) if the Product is part of a software set (bundle), it may not be transferred separately and/or altered in any way;
   d) if the Product is part of an IK Multimedia software and hardware package, only the hardware may be transferred and the license to use it may be termed NFR under the agreement.

4. The Licensor reserves the right, at its sole discretion, to:

   a) delete or erase the user serial number required for registration if the same has been fraudulently or illegally acquired;
   b) prohibit the transfer of the serial number required for registration before the expiry of ninety (90) days from the purchase order for the serial number referring to the "transferable user license".

Art. 10 - User devices and generated content

1. The Product is installed on Devices owned or otherwise in the availability of the User, who is the solely responsible for the functionality, update, security protection and functionality of the Devices.

2. The Product may only be installed on the operating systems for which it was designed and described in the Software within the documentation under the heading User Manual.

3. The User is solely responsible for the use, storage, preservation of content generated by him/her, particularly where the generation of content causes harm or infringes on the rights of third parties.

4. In any case, the User shall be held liable and shall hold Licensor harmless from any claim, petition, litigation for which Licensor is held liable as a result of negligence, omissions, violations, offenses however configured that are determined by the willful and/or negligent act of the User in the generation of content.

Art. 11 - Warranties and limitation of the Licensor's liability

1. Licensor warrants to the User that the digital or physical media on which the Product is recorded contain the copy of the Software purchased or made available to the User with all its components, accessories and documentation as described in the user manual as well as being free of defects and, in any case, suitable for the intended use.

2. The Licensor shall, within a period of ninety (90) days from the Effective Date as defined in Article 3.2 above, warrant the conformity of the Product with the following exclusions in the words "does not warrant":

   a) that the operations of the Program can be carried out without interruption or that any defects can be corrected;
   b) that the Product is considered by the User to be unsuitable for the User's personal needs in view of the fact that the Software is not developed "tailor-made" but is intended for mass use;
   c) any defects and faults resulting from improper or deviating from normal use attributable to the User or the User's Device;
   d) any damages resulting from the loss of content developed by the User, the storage of which the Product does not guarantee in any way;
   e) that the Product functions on the User's Device(s) or that the functionality of the Product remains unaffected by updates made by the User to its hardware, operating system or third-party software in use by the User.

In any case, the user manual is the only legally binding document for the Licensor and, consequently, any verbal agreements, presentations, advertising material, e-mail exchanges, etc. between the User and distributors, salesmen, agents, and any other personnel who have intermediated the purchase of the Product shall be irrelevant.

3. Any verification of the efficiency of the Product shall be carried out using exclusively the control procedures prepared by the Licensor.

4. In order to make a warranty claim under the terms described above, the User is responsible for contacting IK Multimedia via the appropriate section of the website "contact us" https://www.ikmultimedia.com/contact-us/.

5. The Licensor and its distributors and partners within a reasonable period of time, in any case not exceeding fifteen (15) days, shall follow up the warranty claim by repairing or replacing the Product or refunding the purchase price, if incurred by the User, within a reasonable period of time based on the complexity and/or onerousness of the warranty claim.

6. With the exception of the above clauses, the Licensor assumes no other obligation and makes no other warranties beyond those set forth herein and shall in no event be liable for any damages whatsoever related to or resulting from any defects in quality, suitability, use, failure to use or usability of the Product.

7. The User shall forfeit any and all warranties if the User modifies, integrates or otherwise intervenes in the Software, or uses the Product in a manner not in accordance with the instructions or on processors other than those permitted or otherwise violates the User's obligations under this EULA.

8. The Licensor shall not be liable for any damages, direct and/or indirect, contractual or non-contractual, which may occur as a result of the use of the Product or which may be connected to it, such as, but not limited to, any loss of profit, loss, interruption of business, loss of information and/or data, any defects and/or damages in the processor and/or the Devices on which the Product is installed and/or in the contents processed by the User, and/or defects and/or damages resulting from the use of such Devices which remain at the exclusive risk of the User.

9. In any case, any claims for damages by the User shall in no event exceed the amount of the purchase price of the license fee, insofar as incurred by the User.

Art. 12 - User Support Service updates and new versions

1. For the entire duration as defined in Article 3 above, the User may obtain technical assistance from Licensor by accessing the section of the website https://www.ikmultimedia.com/contact-us/.

2. The Product is provided "as it is" and "as available" on the Effective Date, without Licensor being obliged to provide "updates" and/or "new versions of the Software".

3. The User agrees to independently download such "updates" from his/her user area - if available - always using the latest version of the IK Multimedia Product.

4. The Licensor may modify the Product at its sole discretion for any reason and at any time, in particular it may add, subtract, replace functionalities, update, correct the Product either for technical reasons or to perform maintenance and/or configuration operations in order to improve and/or optimize the Product.

5. The Licensor may at its discretion release a new version of the Program "upgrade" or "crossgrade", so marked or otherwise identified by IK Multimedia (new version of the Product made available to the User at a discounted price). Such version can be used by the User only and exclusively if the User is a legitimate licensee of a previous version of the Product, except for NFR versions as indicated in the article. 2.2.

6. The Product marked or otherwise identified by Licensor as an "upgrade" or "crossgrade" replaces, swaps, increases the Product purchased or made available on the Effective Date.

7. The User may only use the Product resulting from the update and/or new versions (upgrade or crossgrade) in accordance with the terms of this EULA.

8. If the Product is an upgrade or crossgrade of a component of a software program package (bundle), it may only be used and transferred as part of the package and may not be separated by use on more than one device.

Art. 13 - Unilateral withdrawal by the User

1. Non-acceptance of this EULA shall be tantamount to exercising the User's unilateral right of withdrawal from the license agreement.

2. The User is also entitled to unilaterally terminate the license agreement if for technical reasons there are incompatibility problems with the Product, which do not permit its installation provided they

    a) are not attributable to the User;
    b) exist on the Effective Date;
    c) cannot be resolved by the Licensor's technical support.

3. The User undertakes without delay and in any event within a period of three (3) days from the Effective Date to return to the Licensor (or its distributors or otherwise authorized sellers from whom it purchased or otherwise obtained the license to use the Product) all physical media in its possession.

4. The Licensor or other authorized parties, having verified the integrity of the medium, shall cancel the user's serial number and refund the full amount paid for the purchase directly to the user within a period of 30 days from the date of return.

Art. 14 - Intellectual Property of Software

1. The Software and all consequent rights are reserved by IK Multimedia Production S.r.l.

2. The Software and its use is subject to national and international laws protecting copyright and intellectual property.

3. The User does not acquire any ownership rights to the Software except for the limited rights of use as set out in this EULA.

4. IK Multimedia Production S.r.l. reserves all actions and claims for damages against the User or third parties who infringe the Licensor's rights.

Art. 15 - Validity of the EULA - Severance

1. If a court of competent jurisdiction or a competent authority determines that any provision of this EULA is invalid, illegal, or unenforceable, such provision or part thereof shall be deemed unenforceable.

2. In such cases, all other provisions of this EULA or parts thereof not affected by invalidity shall nevertheless remain valid and enforceable between the Parties.

Art. 16 - Applicable law

1. Should the Product have been purchased in Italy, the interpretation, execution and settlement of disputes shall be governed by Italian law and jurisdiction shall be attributed exclusively to the Court of Modena, without prejudice to the jurisdiction of the Court of the Consumer, where the User is a natural person acting for purposes that are unrelated to the entrepreneurial, commercial, handicraft or professional activity carried out.

2. If the Software was purchased in any other country, this agreement shall be governed by the laws in force in that country.

Last updated on September 20, 2023.

License Agreement

ARC Studio

ARC Studio is a room correction standalone solution for stereo monitoring systems, combining a hardware processor, ARC 4 software, and a precision MEMS measurement microphone. The all-new algorithm removes the acoustic issues that can lead to making incorrect sonic decisions while maintaining incredibly natural and transparent sound..

Work faster

- Hardware, standalone digital room correction processor
- Works with any pair of monitors, in any room
- Includes ARC 4 software and measurement mic
- Full-range correction for any kind of audio production
- Near zero latency for real-time monitoring in any setup
- Ideal for all studios, from in-the-box to console-based
- Control room tuning for a perfect match to the preferred target curve

With incredible sound

- New algorithm for incredibly natural, "unprocessed" sound
- Premium conversion for total sonic transparency
- 120 dB dynamic range, ultra-low THD, and jitter
- Natural or linear phase correction and up to 6 target curves
- Emulate virtual monitors and "real-world systems

ARC Studio

1 – ARC System Overview

1.1 – How does it work?

With ARC 4 it is possible to measure any acoustic space using the ARC 4 Analysis software and the included MEMS measurement microphone connected to any audio interface with a phantom-powered microphone input.
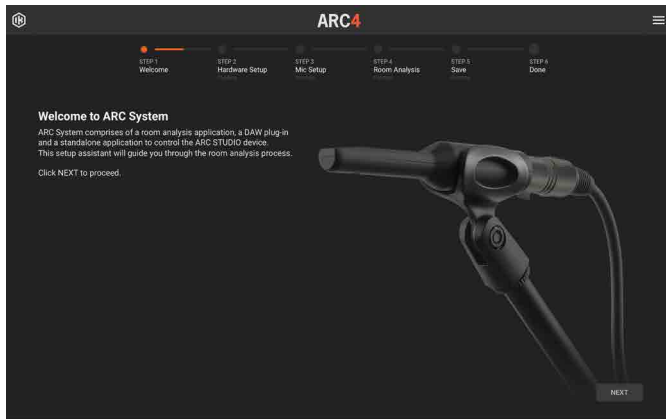
The ARC 4 Analysis software guides step-by-step through a series of measurement points around the listening area – with ARC's flexible placement options, the process will be done in less than 10 minutes and can be repeated for multiple pairs of monitors or listening areas.

Once the measurement process is complete, the correction is transferred to the ARC Studio hardware unit processor for latency-free, set-and-forget operation. From now on, the unit works completely standalone, while still letting switch between monitors and presets whenever desired.

Alternatively, without the hardware, the correction can still be used in any DAW by inserting the ARC 4 plug-in on the master bus.

2 – ARC System Components

2.1 – The ARC 4 measurement microphones

For the most accurate results, it is strongly suggested to use the included ARC 4 MEMS microphone.

However ARC 4 allows using any other measurement microphone you might already have, provided it comes with a calibration file (which is usually a text file provided by the manufacturer).

When using other measurement microphones, the very high accuracy ARC 4 guarantees when using the dedicated microphone cannot be ensured as it depends on the accuracy of the 3rd party microphone.
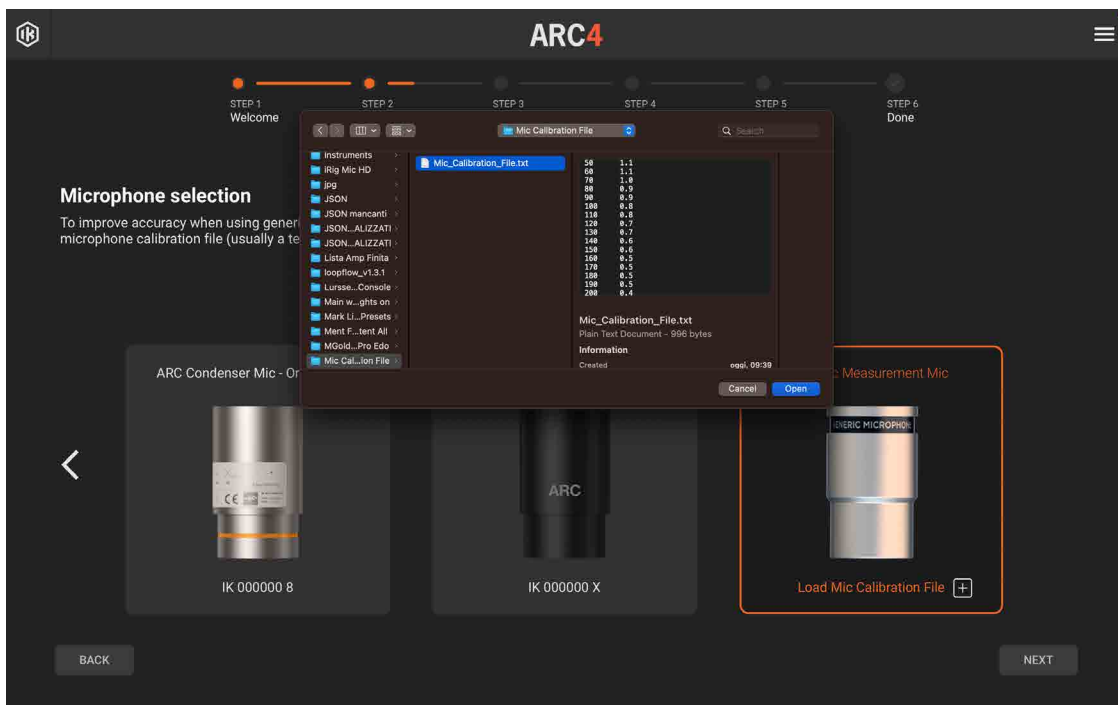
2.2 – The ARC Studio

ARC Studio delivers the power of the ARC System in a hardware solution, widening the range of applications to all those studios where the DAW is not always direct or the only source. In addition to this, the hardware solution allows for the correction to be applied to the monitoring system in a way that is totally transparent to the workflow.

For pro studios, whether digital or analog console-based, ARC Studio allows for correction and custom-tuning for any monitoring setup from nearfields to mains, preserving the inherent system's sonic quality.

And for DAW-based studios, ARC Studio frees you from the hassle of inserting plug-ins on the master bus of your work and preserves zero-latency monitoring setups.

Whether you're in a makeshift studio or a world-class one, fine-tuning your monitoring to your taste has never been easier and has never sounded so good.

For Every Studio

- Compact digital room correction processor
- High-end audio conversion
- Full-range correction for any kind of audio production
- Zero latency for real-time monitoring in any setup
- Improves even untreated or makeshift spaces
- Ideal for all studios, from in-the-box to console-based

Faster Workflow

- Includes ARC measurement mic and software
- Generate correction profiles in just minutes
- Switch sweet spots for clients, collaborators
- Test mixes through X-MONITOR virtual monitor profiles
- Emulate common "real-world" playback systems

Performance and Features

- Premium AD and DA conversion, total sonic transparency
- 120 dB dynamic range, ultra-low THD, and jitter
- Natural or linear phase correction
- Set upper/lower frequency correction limits
- Up to 6 target curves to fine-tune the in-room response

2.3 – The ARC 4 analysis application

The ARC 4 Analysis application is a standalone application that analyzes your speakers and room system and automatically calculates the best possible correction that will be applied later by the ARC 4 Plug-in and/or stored in the ARC Studio device.

The ARC 4 Analysis application works by sending test tones (usually called "chirps") to your speakers while recording the signal captured in the room by the measurement microphone.

By measuring your room across a 3D space around the listening position, IK's award-winning ARC technology creates a 3D snapshot of your room to identify and completely correct the dominant problematic issues, while maintaining the natural sonic quality of the monitoring system as if it wasn't corrected.

You have the choice of going through a 21-point ultra-accurate measurement process or a 7-point quicker one. Both will sound great, the longer measurement is more adequate for fixed installations and permanent setups, while the shorter measurement is ideal for on-the-go or ad-hoc setups, making it possible to measure the room in less than a minute.

2.4 – The ARC 4 correction plug-in

This multi-platform plug-in is the ARC System 4 component that will apply the correction curve measured by the ARC 4 Analysis application to the monitoring system.

The ARC 4 plug-in should be inserted on your DAW's stereo master bus or, when possible, on the monitoring bus.

Thanks to the ARC 4 plug-in included features, you can customize the setup for ideal performance no matter your preference.

2.5 – The ARC 4 Studio standalone application

The standalone application is designed to manage the setup of the ARC Studio hardware unit. Using the app, you can either have a "set and forget" software-less approach and use the application just the first time to configure the ARC Studio device or keep the device connected via USB-C to control every element of the correction from your desktop for limitless flexibility.

3 – Setup for Analysis

3.1 – What you need to analyze your room

To correctly analyze your room, you need:

1. The ARC 4 Analysis application. This is included in the ARC System 4 installer and works as a standalone application.
2. A high-quality audio interface with at least one XLR microphone input with +48V phantom power. The ARC 4 MEMS Measurement Microphone or any other measurement microphone.
3. Microphone stand and XLR microphone cable.

3.1.1 – Audio interface requirements

To correctly analyze your room, you need a high-quality audio interface that can operate at 48 kHz.

On Windows, ARC 4 works exclusively with ASIO drivers. Make sure your audio interface supports this standard.

3.2 – How to set up for analysis

To properly capture your room analysis, you need to connect your measurement microphone to your audio interface and your audio interface to the speakers. Usually, you will already have the speakers properly connected, so you do not need to change anything on the speaker connections at all.

IMPORTANT NOTE: If you are using ARC Studio, make sure the correction on ARC Studio is OFF before starting the measurement process.
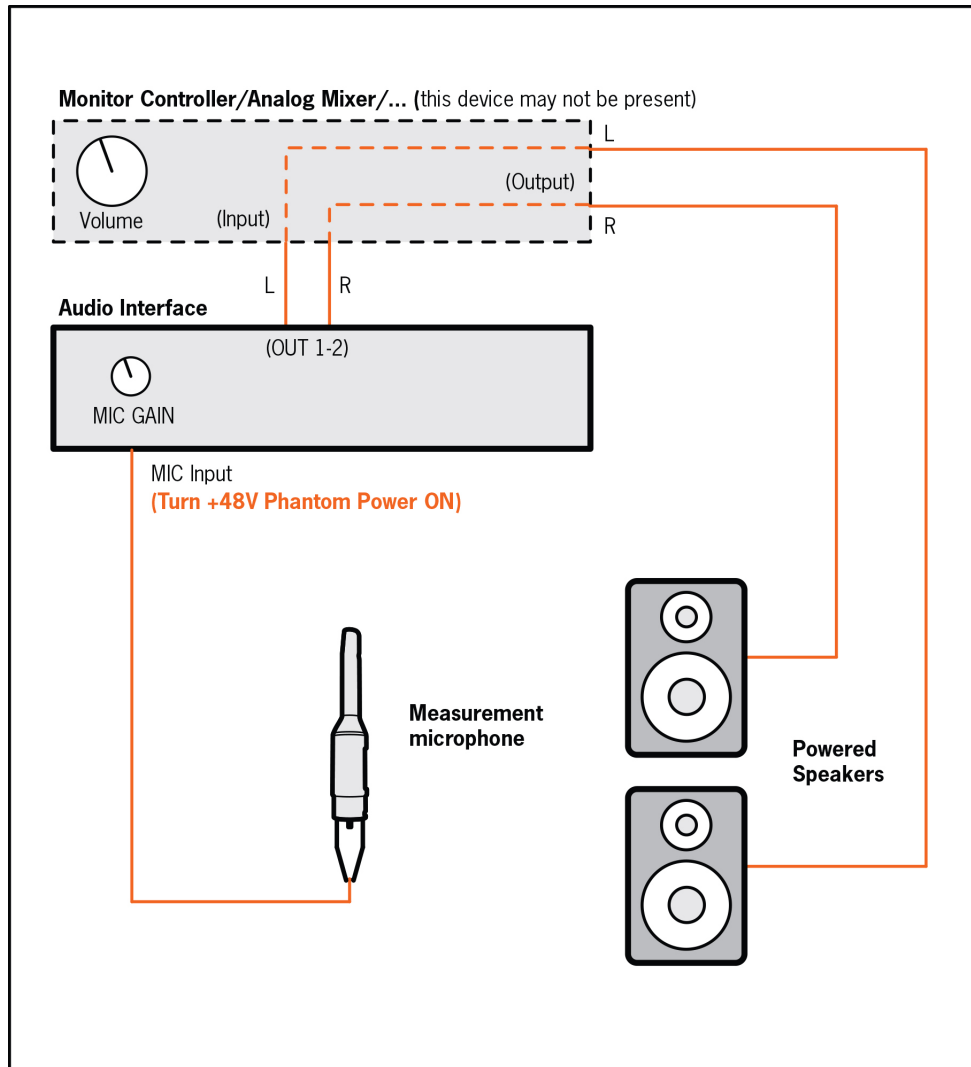
3.2.1 – Speaker connection

Make sure that your Left (L) and Right (R) speakers are connected directly to a pair of your audio interface outputs. If anything is present between your audio interface and your speakers (like a mixer, a monitor management system, etc.), check that their settings do not alter the audio signal in any way (e.g., no tone controls, no mono switch, phase reverse, etc.).

If you use a powered subwoofer that performs bass management, just connect your audio interface outputs to the subwoofer inputs, and your L and R satellites to the proper subwoofer outputs. This way the system will still be seen as a standard dual-channel system (with an increased low-frequency extension).
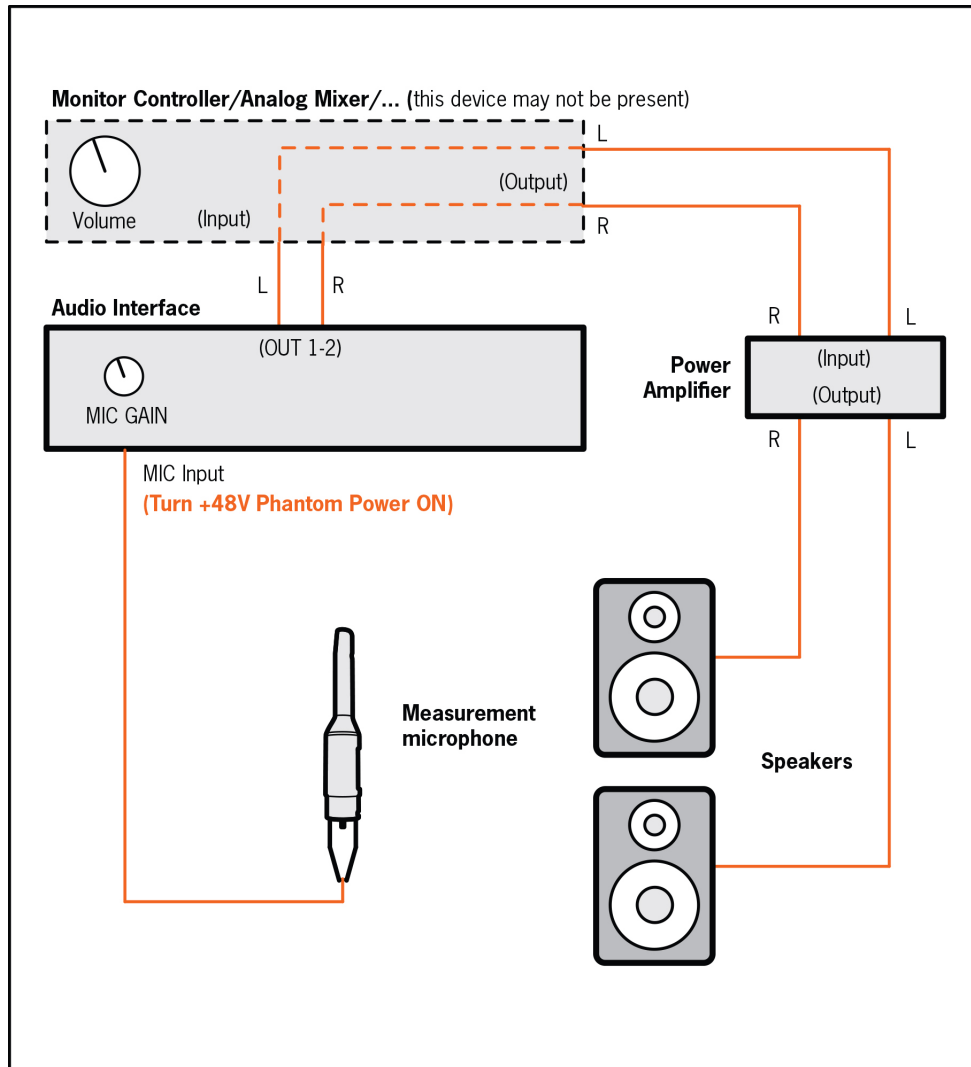
3.2.2 – Powered speaker setup

This shows one possible way to connect your system components when powered speakers are used.
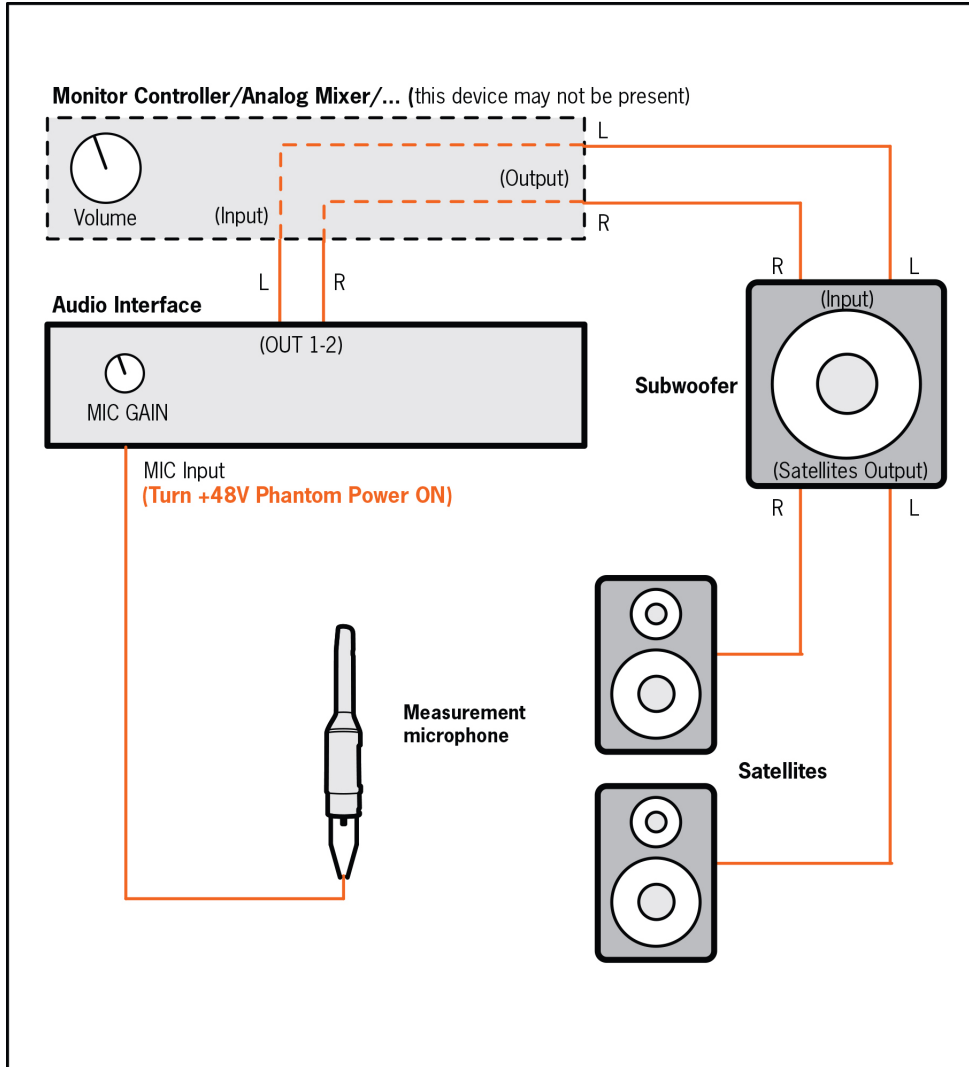
Monitor Controller/Analog Mixer/... (this device may not be present)

Volume   (Input)

(Output)

L

R

L   R

Audio Interface

(OUT 1-2)

MIC GAIN

MIC Input
(Turn +48V Phantom Power ON)

**Measurement
microphone**

**Powered
Speakers**

3.2.3 – Passive speaker setup

This shows one possible way to connect your system components when passive speakers are used.

Setup for Analysis

3.2.4 – Active subwoofer and powered speakers setup

This shows one possible way to connect your system components when an active subwoofer is used together with powered speakers.

Monitor Controller/Analog Mixer/... (this device may not be present)

Volume   (Input)   (Output)   L   R

L   R

Audio Interface

(OUT 1-2)

MIC GAIN

MIC Input
(Turn +48V Phantom Power ON)

Measurement microphone

R   L

(Input)

Subwoofer

(Satellites Output)

R   L

Satellites

3.2.5 – How to connect the measurement microphone

Please connect your measurement microphone to a high-quality microphone preamplifier and enable the +48V phantom power supply.

Please check that your system meets either of these two requirements (either one is okay):

1. The preamplifier is built into the audio interface. In this case, the microphone will be directly connected to the XLR input on the audio interface without using any attenuator pad and with +48V phantom power turned on.

2. The audio interface has no mic preamplifier. In this case, you will need to connect the microphone to an external preamplifier or a mixer and then connect the preamplifier output to the audio interface line input.

To get the necessary precision, the preamplifier should be as clean and flat as possible. For this reason, you should avoid using tube preamplifiers for measuring. Also, electronically balanced (transformerless) preamplifiers are preferred over transformer-based designs which tend to color the sound too much for this need.

To start, set the gain control on your preamplifier to its middle position. Probably you will have to adjust this later on when setting levels.

IMPORTANT: TURN DIRECT MONITORING OFF.

Any direct monitoring of the audio interface mixer should be turned OFF. To confirm this, simply check that no microphone signal is going out to the speakers.
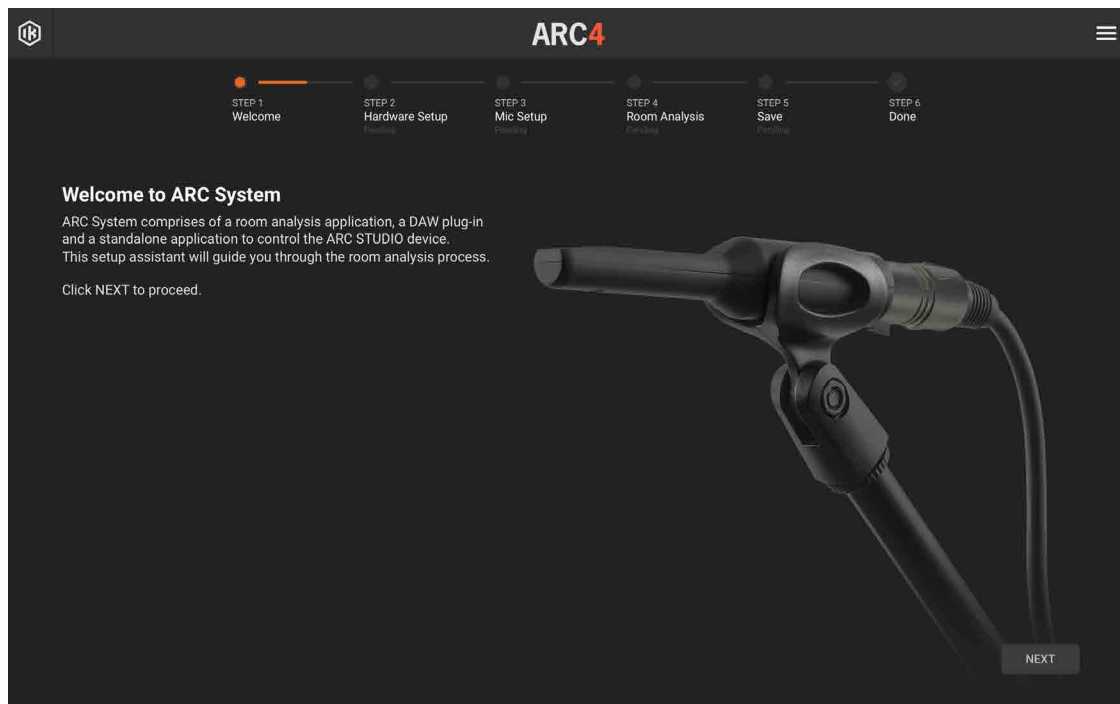
4 – Using the ARC 4 Analysis

4.1 – Opening the ARC 4 analysis application

On Windows, go to your Start Menu/Programs and launch ARC 4 Analysis. On macOS, go to your Applications folder and launch ARC 4 Analysis.

4.2 – Welcome to the ARC System 4

Upon launching the Analysis app, ARC 4 will display its welcome screen. Click NEXT to continue.

PLEASE NOTE: After you have completed each step's instructions, click NEXT. The process steps will be displayed in the top bar.

4.3 – Microphone selection

Select the measurement microphone you have by clicking 1 of the 4 tabs present on the Microphone Selection page of ARC 4 Analysis.
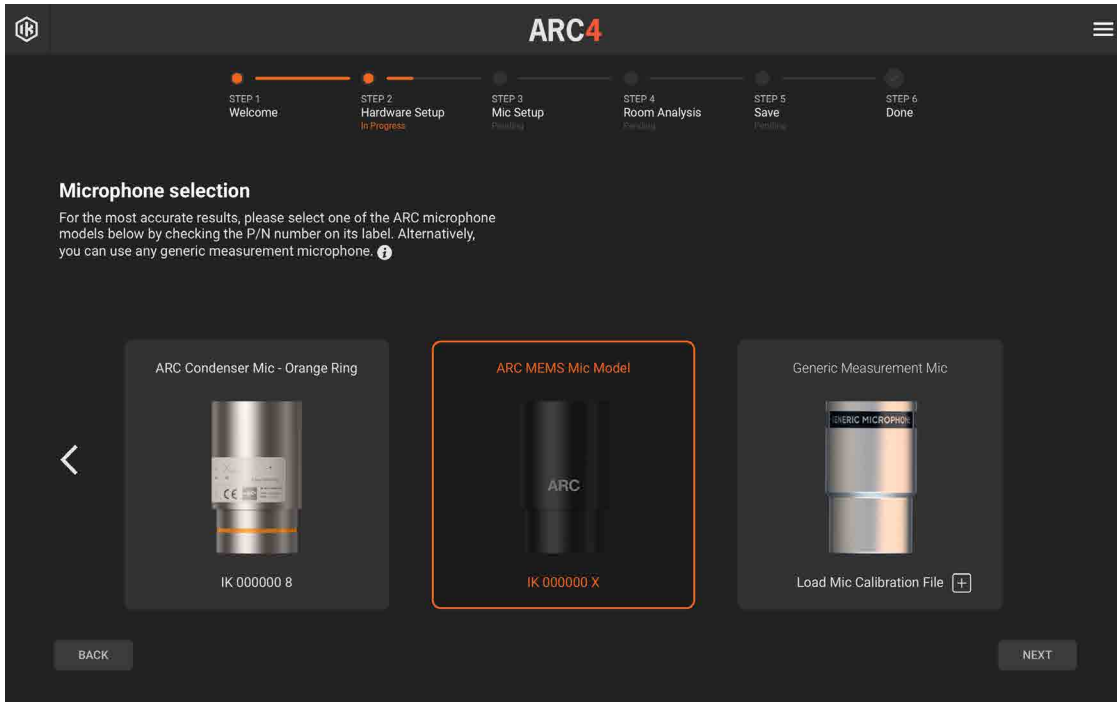
The ARC System 4 Measurement Microphone is available in 3 different versions:

1. early ARC 1 metal body microphones without the orange ring
2. early ARC 1 and ARC 2 metal body microphones with the orange ring
3. new ARC 3 and ARC 4 MEMS mic with black plastic body

It is important to understand that none of the microphones are inherently better or worse. It is simply that due to a small difference in frequency response, the software must be told which microphone you are using to ensure the most accurate measurement possible.

The system bases its accuracy performance on the precision of the analysis process, so it is strongly recommended to use a dedicated ARC microphone. However, in ARC 4, you can also perform the room analysis using a standard Measurement Microphone (sometimes also called "RTA Mic") you might already have at your disposal.

Measurement microphones are also called "RTA" microphones because they typically come with real-time audio spectrum analyzers. They are omnidirectional, with a flat frequency response, and are only used for taking audio measurements.
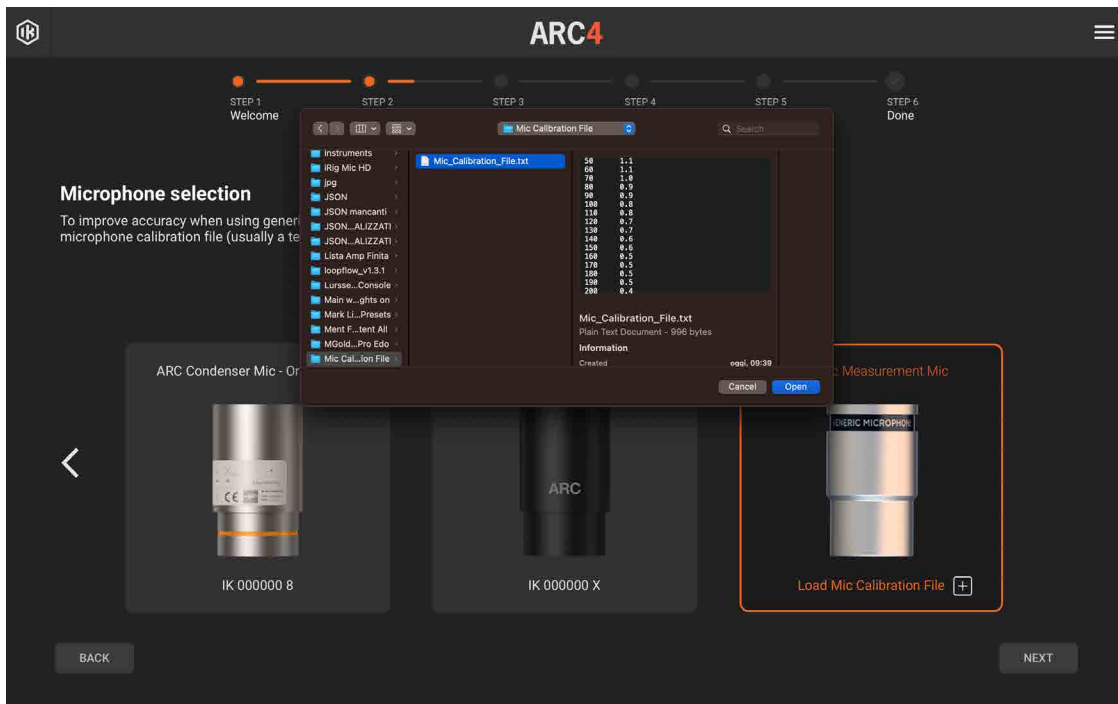
ARC 4

PLEASE NOTE: microphones designed for recording, even the omnidirectional ones, are normally not suitable for taking audio measurements, and if used with ARC, they will provide unreliable results.

To use your available Measurement Mic, select the fourth Mic selection tab, "Generic Measurement Mic." You can now proceed to Room Analysis or, for better precision in the results, you can load a calibration file for your mic.

Calibration files (also called ECF by some manufacturers) are .txt files that describe the frequency response of your microphone and they are normally available from the Mic manufacturer.

To load your microphone calibration file, click on the "+" icon beside the Load Microphone Calibration label and proceed with the room analysis process. Now from the system dialog, browse and load the calibration file (or ECF).


Once you have selected which microphone type you have, click NEXT to proceed with the ARC 4 Analysis process. If you have not selected a microphone type, you will not be able to click NEXT to continue.

IMPORTANT: If the wrong microphone type is selected, the resulting ARC 4 correction will be inaccurate. Please take the time to make sure that you have selected the correct microphone to ensure an accurate measurement!

ARC 4

4.4 – Audio setup

Select your audio hardware here and then choose which channels to use for speaker outputs and microphone input.
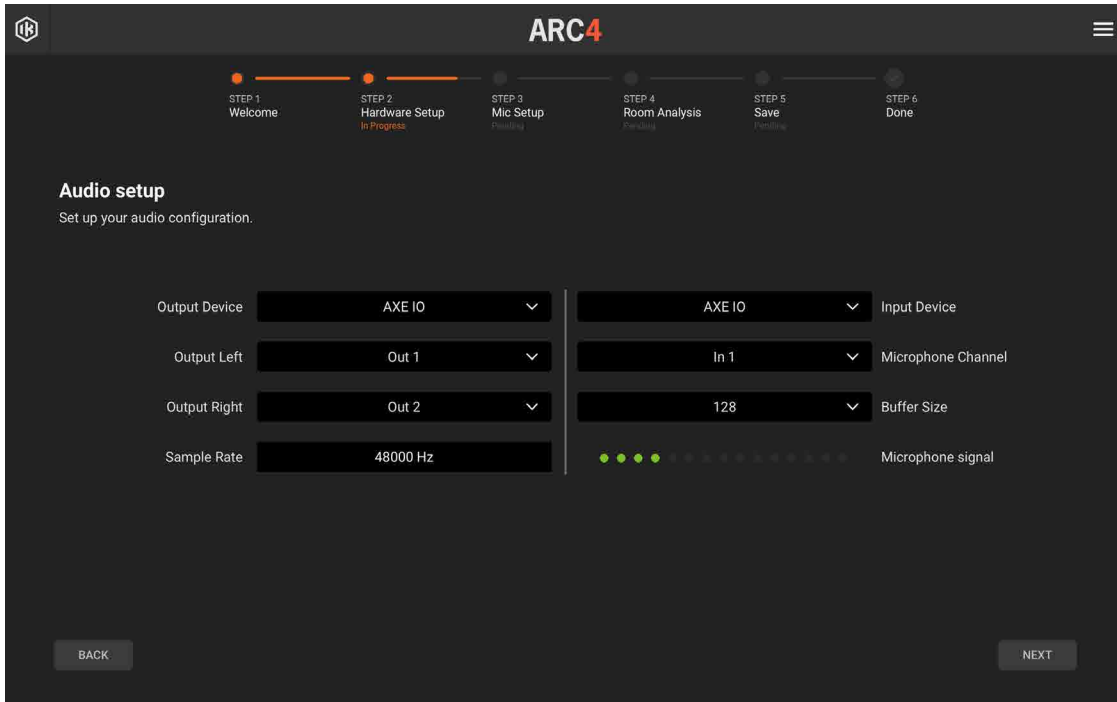
Output Device: Click this menu to select the audio interface you are using for output. ASIO-compatible interfaces will be listed in Windows, and Core Audio-compatible interfaces will be listed in macOS.

Input Device: Click this menu to select the audio interface you are using for input. ASIO-compatible interfaces will be listed in Windows, and Core Audio-compatible interfaces will be listed in macOS.

Output Left: Click this menu to select the audio interface output that is connected to the LEFT speaker. For example, "Output 1."

Output Right: Click this menu to select the audio interface output that is connected to the RIGHT speaker. For example, "Output 2."

Microphone Channel: Click this menu to select the audio interface input where the Measurement Microphone is connected.

Microphone Signal: Help yourself with the mic signal meter which displays your microphone's volume, and remember to set the gain in the middle position. Then turn on +48V phantom power to the mic.

ASIO Panel: This button only appears in Windows where ASIO drivers are used.

Buffer Size: By default, ARC 4 analysis will set the buffer size to the lowest value supported by your hardware starting from a minimum of 128 samples.

Sample Rate: ARC 4 Analysis will automatically set the sample rate to 48 kHz.

Click NEXT when the Interface, Outputs, and Microphone Input are all correctly selected.

4.5 – Select the listening position type

Now select the ideal environment you are analyzing to help you position the microphone. The orange dotted line, positioned around the listening position, indicates the area where the captures are to be taken.

In the next steps of the walkthrough, you will be shown how to proceed with each capture.

Select one of the following options, and click NEXT to proceed:

Project Studio

Project Studio, is the favorite choice for those who work in a small environment: a small studio or a bedroom studio, with one single listening position.
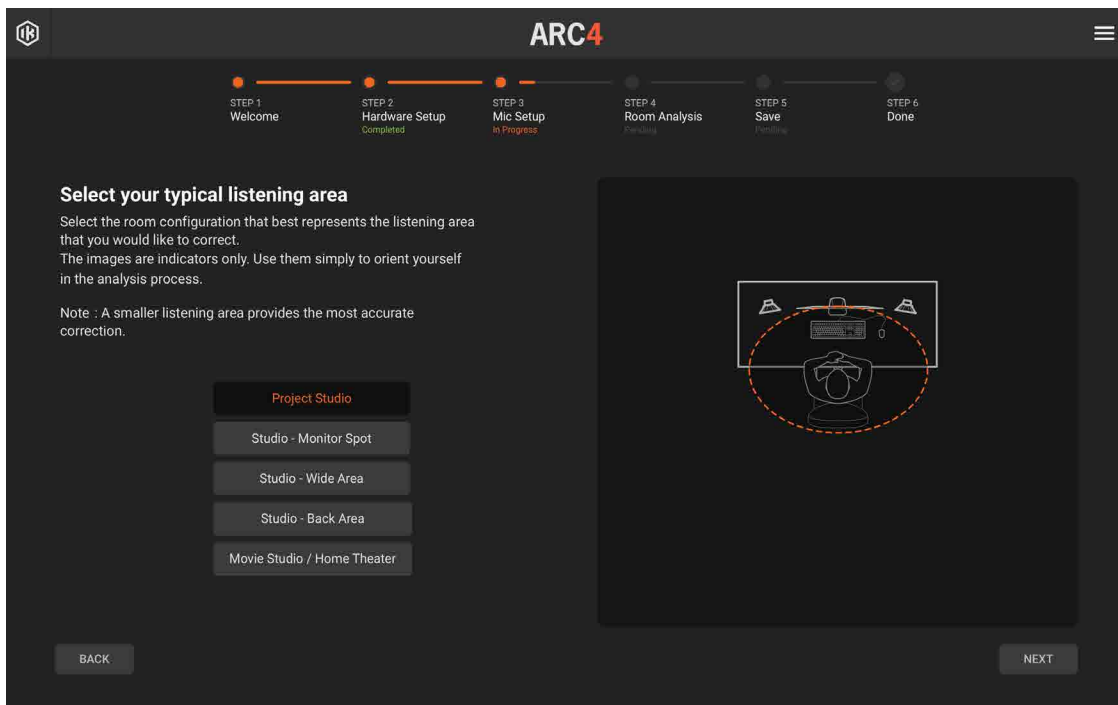
The man sitting on the chair is in the main position and it is perfectly centered between the two speakers. This is the position you should use to calibrate levels and for the first capture.
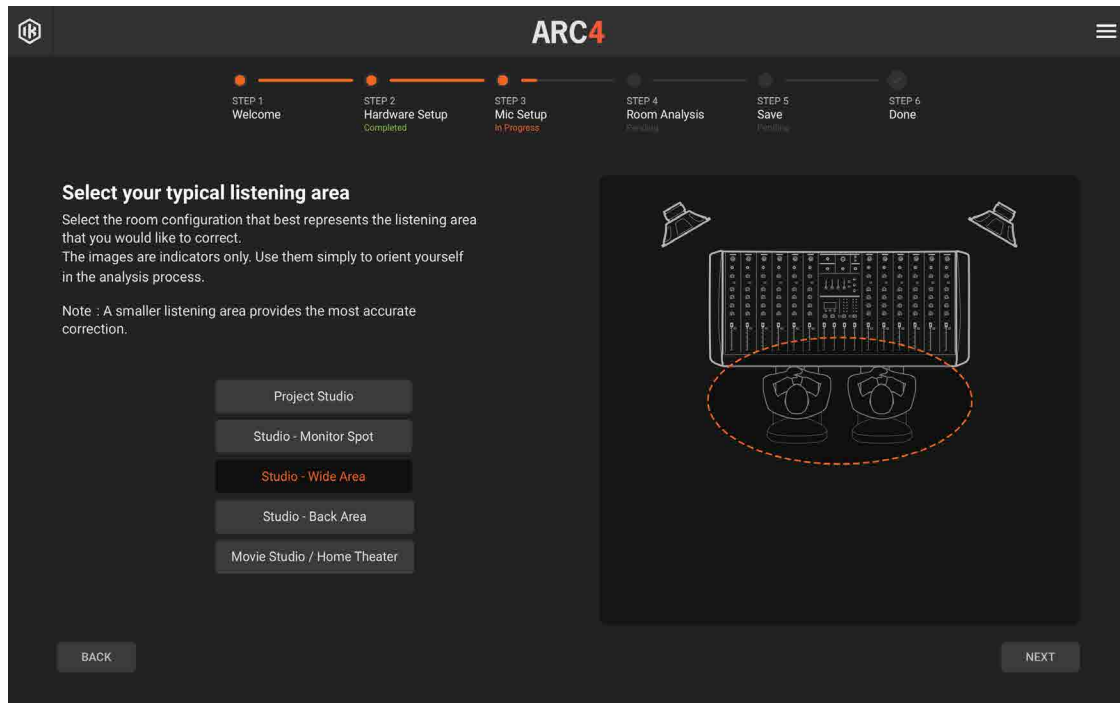
ARC 4

Studio – Monitor Spot

Studio, one chair, one main listening position.
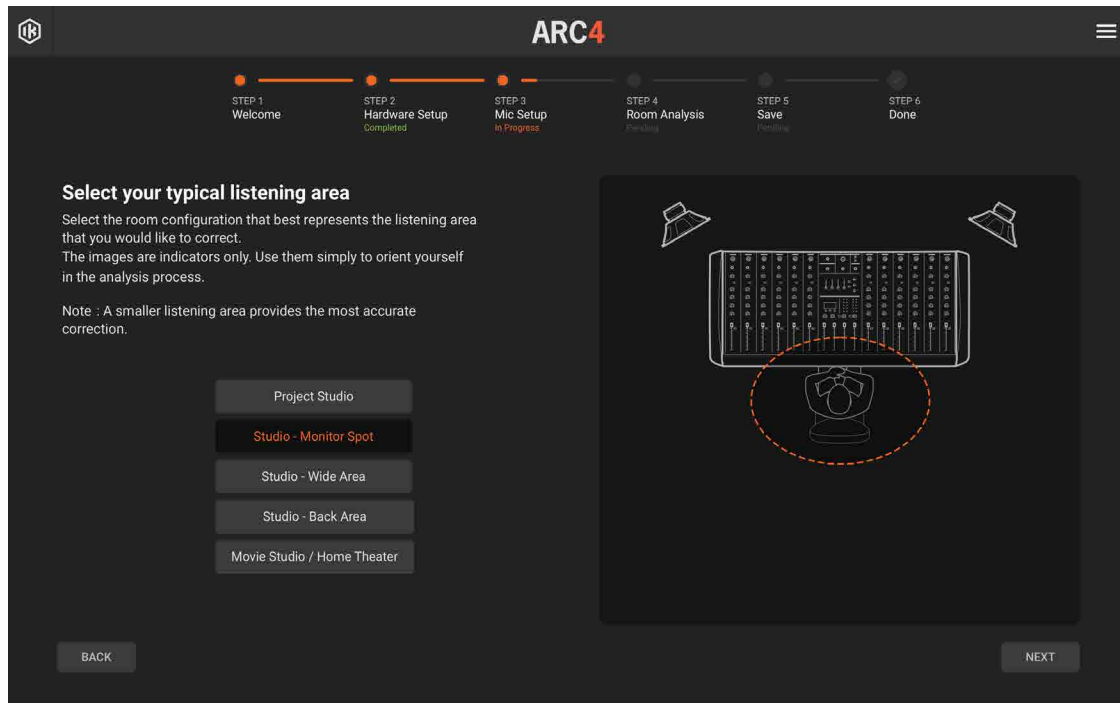
The man sitting on the chair is in the main position, and it is perfectly centered between the two speakers. This is the position you should use to calibrate levels and for the first capture.
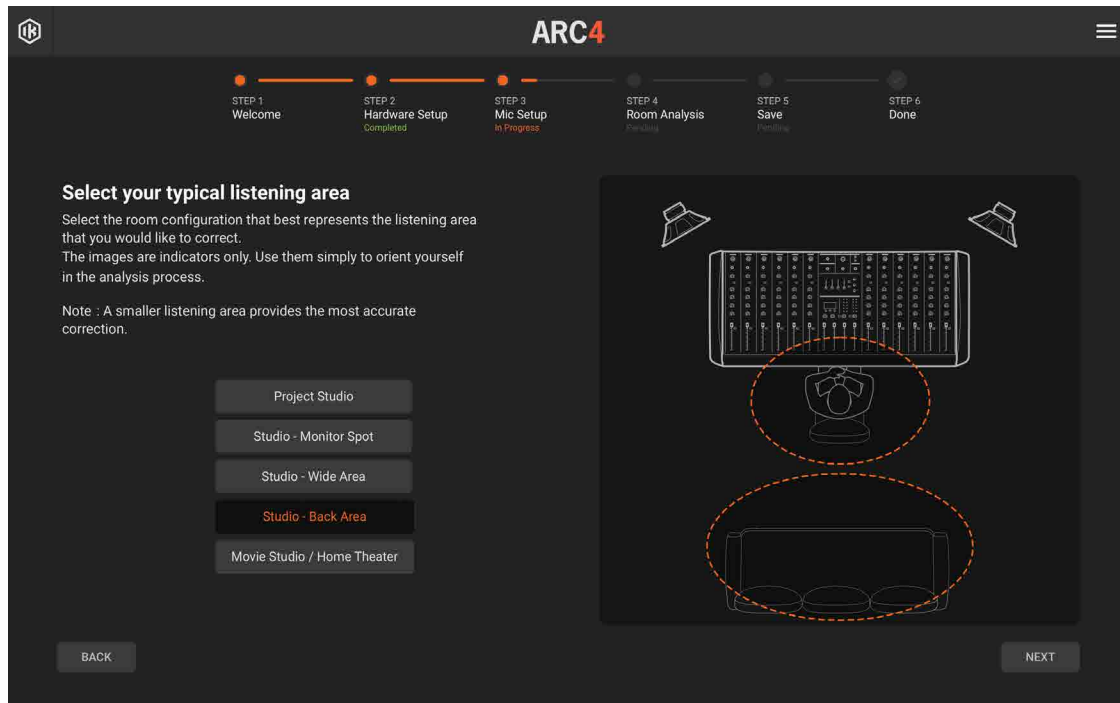
ARC 4

Studio – Wide Area

Studio, two chairs, wider listening position.

The men sitting on the chairs are in the main position, perfectly centered between the two speakers. The position you should use to calibrate levels for the first capture is in the middle of the two chairs.

# ARC 4

Studio – Back Area

Studio, one chair plus "client couch" listening area.

The man sitting on the chair is in the main position, and it is perfectly centered between the two speakers. This is the position you should use to calibrate levels and for the first capture.

The optimized listening area is extended to the client's couch as well. Placing the microphone as shown in the next steps will create a correction that optimizes the listening at the engineer's chair and the client's couch at the same time.

ARC 4

Movie Studio/Home Theater
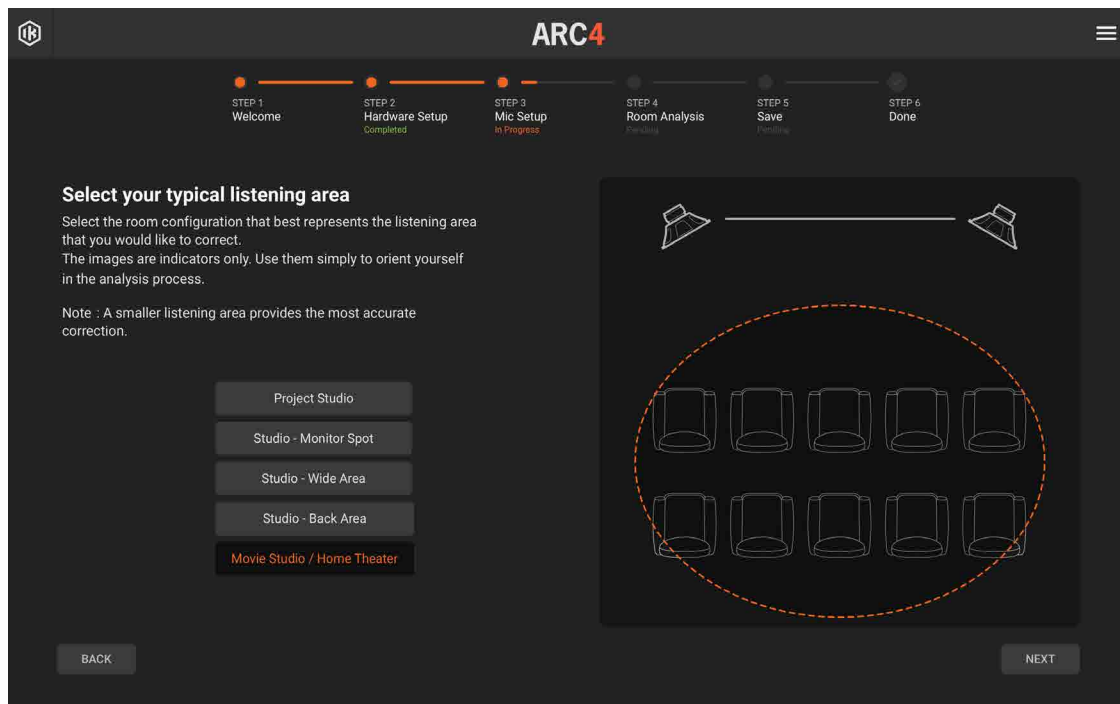
The position you should use to calibrate levels for the first capture is in the middle of the area, perfectly centered between the two speakers. The entire sitting area is covered, and the most "accurate" listening experience will be at the main chair, front line.

4.6 – Position the microphone

Now place and align your microphone horizontally and vertically, aligned with your ears.

PLEASE NOTE: As indicated in the walk-through images, for all ARC 4 Analysis captures, the MEMS Measurement Microphone and all the generic measurement microphones must be positioned HORIZONTALLY, which is different than the ARC condenser microphones which require vertical positioning.

Example of correct ARC MEMS mic positioning (this position is also correct for all generic RTA microphones):
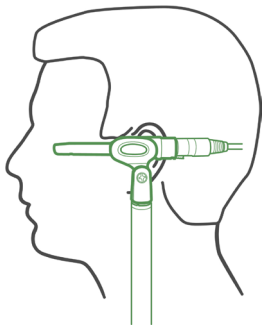
Example of correct ARC Condenser mic positioning:
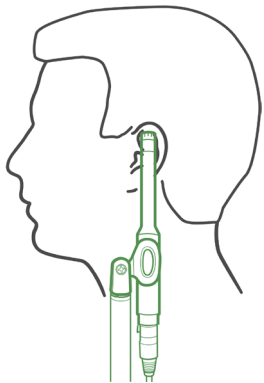
Make sure to clip the microphone on a standard mic stand.

Try to use a mic stand with a boom arm that is extended as far away from the stand as possible. This helps avoid reflections from the stand that will interfere with the analysis at high frequencies.

Do not stand or sit near the microphone while the analysis is running.

As indicated in the figure, the microphone has to be set at the same height where your ears are when you are listening to the speakers.

ARC 4

Place the microphone in the main position, which depends on the listening position type selected in the previous step of the walk-through.

At this point, you should have your measurement microphone connected to the audio interface mic input (+48 V phantom power ON), and at the correct height.

Click NEXT to proceed.

4.7 – Playback level/mic preamp level

Once the microphone is correctly positioned at the main position, you can start checking levels:

1. Make sure you are in a quiet environment, and try to avoid noise.

2. Lower your monitoring to the minimum level and click PLAY TEST.

PLEASE NOTE: The studio listening volume can be controlled on your audio interface with the main output level control or with your monitoring management system. If you are using a mixer, you can use your "control room" level.

Click PLAY TEST. This will generate a test sound (chirp), and it will be sent to the outputs specified in the Audio Setup.

3. Gradually raise your monitoring level to hear the test at the same volume you usually have when mixing.

You should start hearing the test tone playing back continuously. Stop increasing the listening volume at the point where the test tone is at a medium intensity, more or less at the level that you generally work in your studio.

CAUTION! DO NOT INCREASE THE LISTENING LEVEL TOO FAST. This could create damage to your speakers and your hearing if the monitoring system is very powerful.

4. Adjust the mic preamp level so that the input level falls into the "Correct" range.

Check the Input Level Meter indicator in the ARC 4 Analysis application.

This meter shows the level of the signal captured by the measurement microphone.
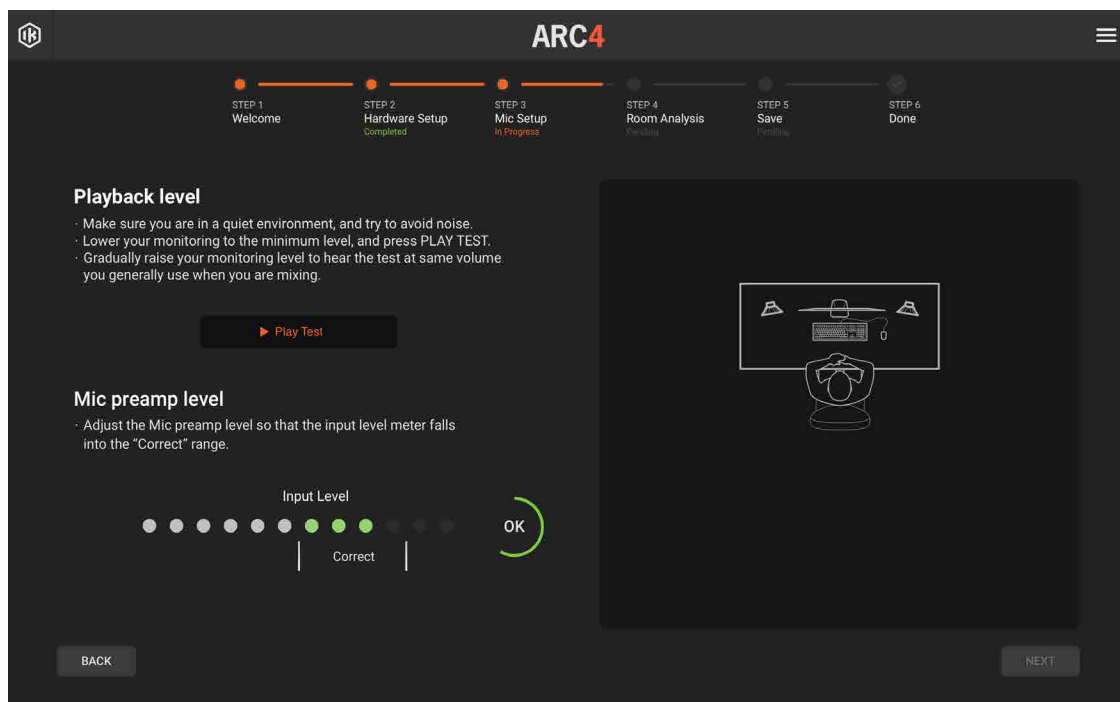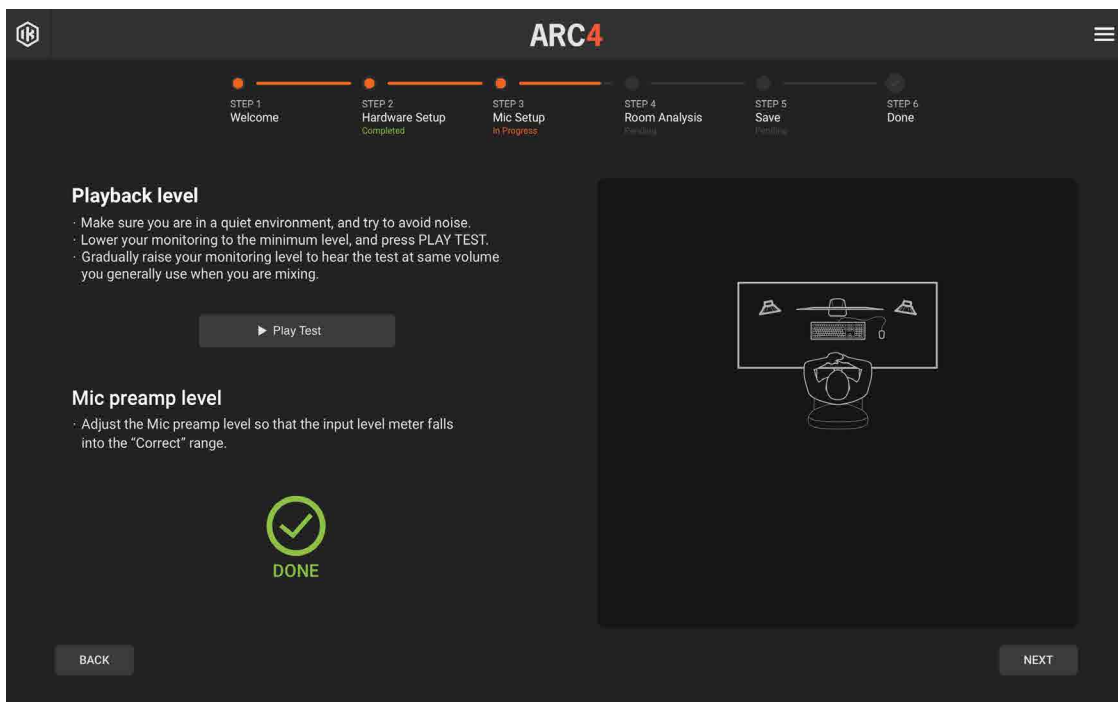
ARC 4

While the test tone is playing, slowly adjust the MIC GAIN control on your audio interface (or on your microphone preamplifier) to have the Input Level Meter indicator display within the "OK" range.

PLEASE NOTE: In case you have increased the MIC GAIN control on your interface to maximum and still see a very low signal or no signal at all on the peak meter, check that all cabling and connections are okay and that +48 V Phantom Power is turned on.

Once you set the correct level, a green badge indicating "Done" will appear.

DO NOT CHANGE any of the audio settings (studio listening level, MIC GAIN control, etc.). Then click NEXT.
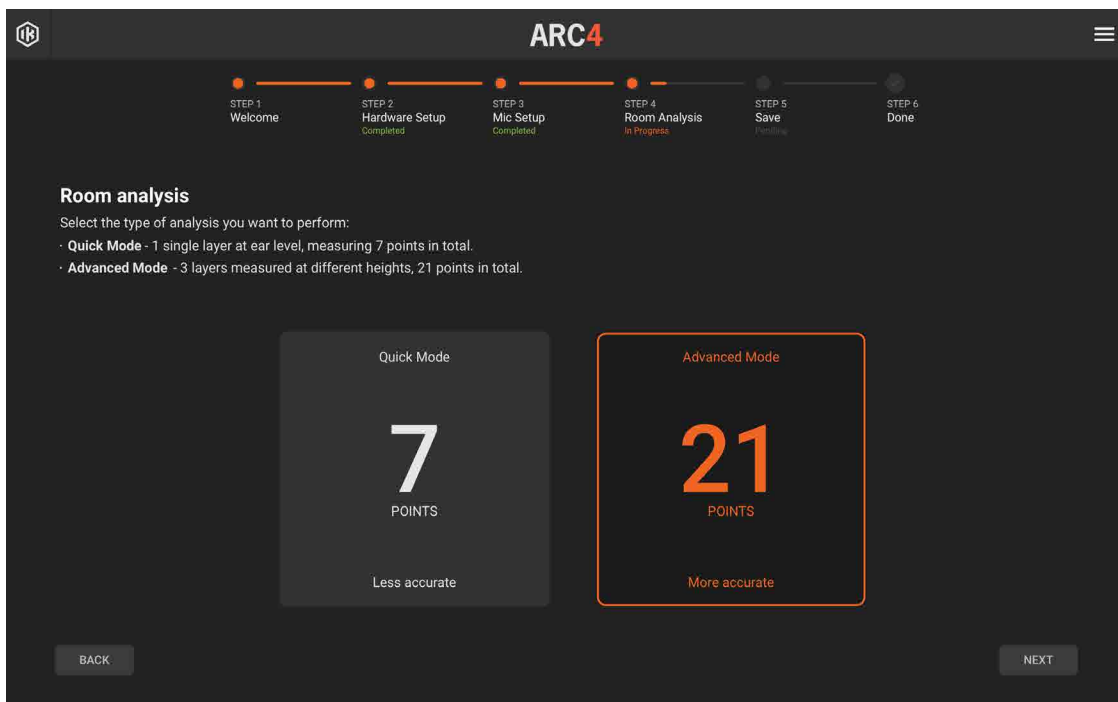
4.8 – Room Analysis

ARC 4 introduces the capability to assess the acoustics of the listening environments using two distinct settings: Advanced Mode and Quick Mode.

Advanced Mode: taking an array of points at three different heights, the system weights the captures in 3D so that the most relevant room issues are addressed without correcting positions that don't affect your monitoring. The result is an incredibly accurate, natural sound that doesn't sound processed or artificial.

The ARC 4 Room Analysis in Advanced Mode requires 7 capture points taken at 3 different height layers, for a total of 21 points.

Quick Mode: this option requires only one layer of 7 capture points at the ear level and it is ideal for on-the-go or ad-hoc setups, making it possible to measure the room in less than a minute.

ARC 4

4.8.1 – Room Analysis – Advanced Mode

The ARC 4 Room Analysis in Advanced Mode requires 7 capture points taken at 3 different height layers, for a total of 21 points.
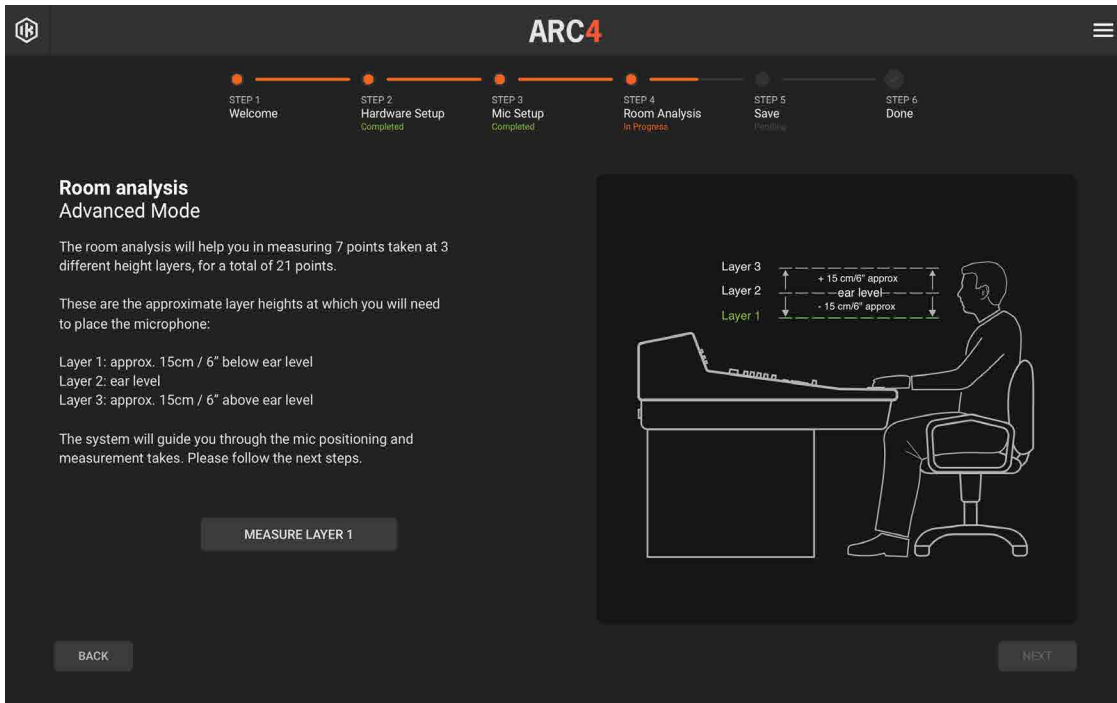
As indicated in the image, the 3 layer positions where to put the microphone, are:

Layer 1: Approx. 15 cm / 6″ below the ear level

Layer 2: Ear Level

Layer 3: Approx. 15 cm / 6″ above the ear level

PLEASE NOTE: These positions are approximate. It is not required to be exact with these measurements. Feel free to position the microphone stand without using the tape measure. You can just go "by eye" and try not to stray too far from the recommended distance.

Click MEASURE LAYER 1 to start.

4.8.1.1 – Layer 1

Set the microphone stand at approximately 15 cm / 6″ below the ear level.

The image on the right shows the room environment that you selected in chapter 4.5, indicating 7 positions (numbered from 1 to 7) to follow within the analysis process. Position number 1 is always the main position and the first place to put the microphone stand.
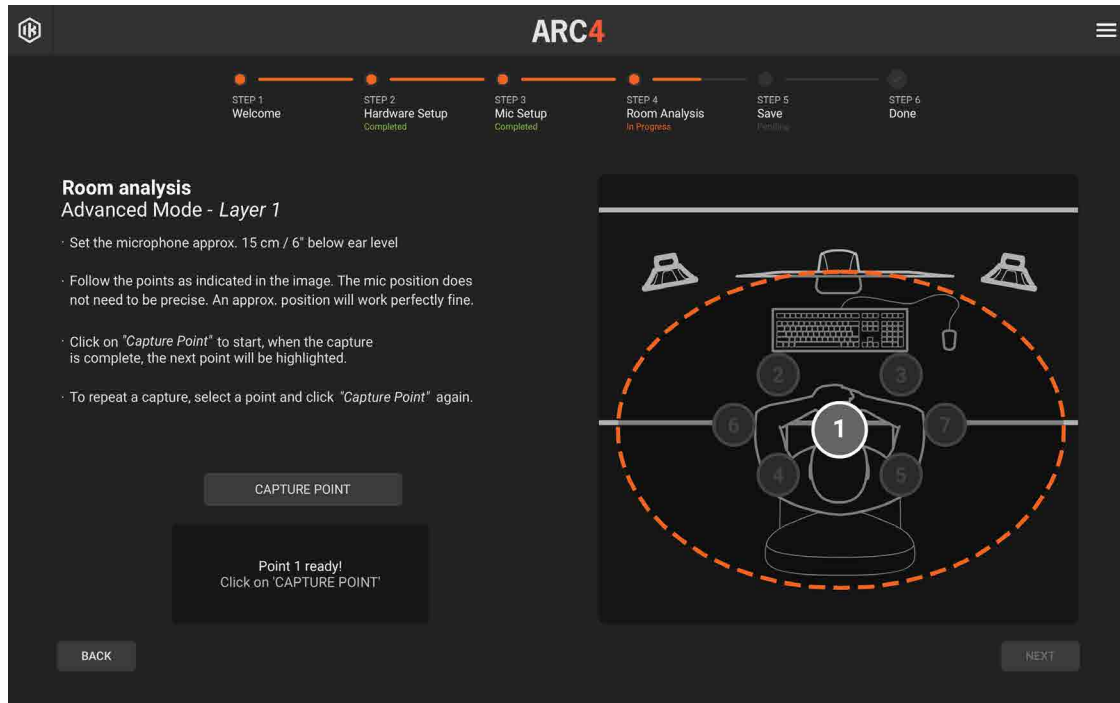

IMAGE 4.8.1.1.1

IMPORTANT NOTE: The suggested analysis positions are not mandatory. You should follow them as they will always provide good, balanced, guaranteed results. However, if you like experimenting, you can also try different patterns, always bearing in mind to keep them symmetrical with the initial central point.

For example, you can take your points narrower and generally closer to your central sweet spot if you always work very close to the central sitting position, or vice-versa you can make them larger and analyze a wider area if you typically move more across the desk. As a general rule, always bear in mind that the closer the analyzed area is, the more precise and linear the monitoring system will perform in that specific spot. And vice-versa, the wider the analysis is, the more broad and "averaged" the response will be in that larger area. Of course, this will make a single spot in that area slightly less precise and linear.

Follow these simple steps to properly analyze the room.

ARC 4

Preparing to analyze:

DO NOT CHANGE ANY OF THE LEVELS THAT HAVE BEEN SET AT PREVIOUS POINTS IN THE WALK-THROUGH.
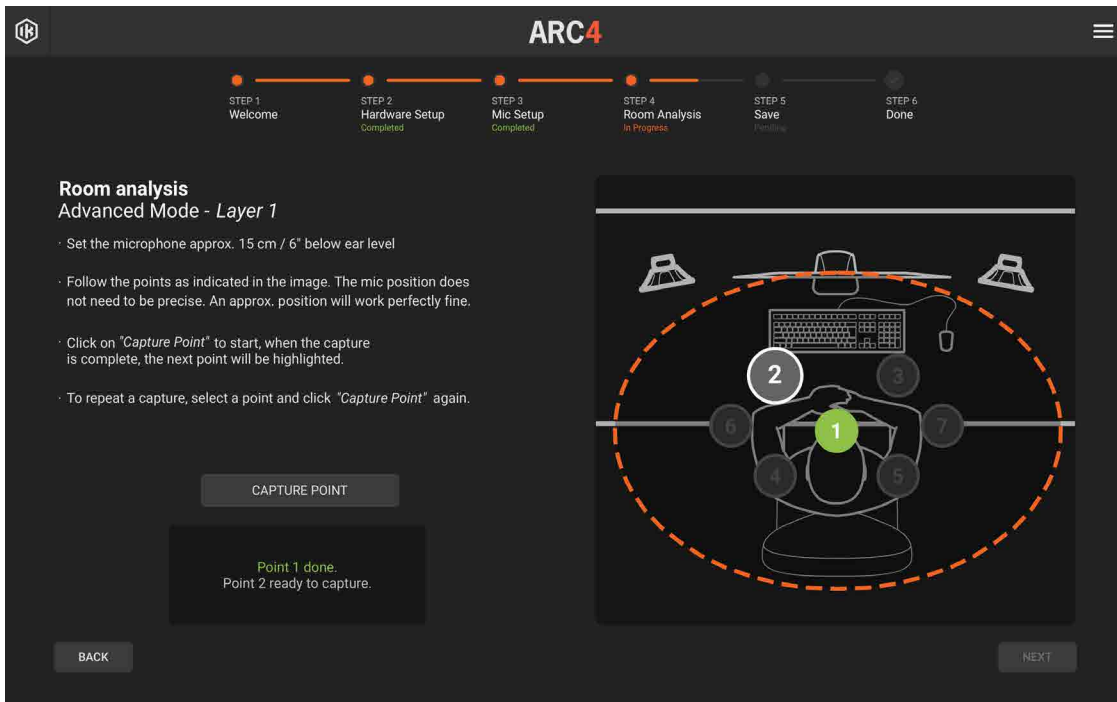
Quiet the room as much as possible (e.g., if you are using a fan and/or air conditioning, turn it off while analyzing your room). Be sure that the room doors or windows are set the same as during your usual listening. For example, don't close the main door when capturing if this door is never closed while you are working or vice-versa. If you usually work with a few people at each session, try to measure the room in the same conditions.

Taking the captures:

Place the measurement microphone in the main position.

Click CAPTURE POINT. Do not make any noise during the analysis process. A chirp will be played 4 times on the left speaker and 4 times on the right speaker for each capture. Do not walk, talk, or move while the chirps are playing or during pauses between the chirps. Do not touch the microphone until the ARC 4 Analysis display says "Done" and the white circle has moved to the next capture number.

When a capture has been successfully taken, its number is highlighted in green, and the white circle moves to the next one. This picture shows capture #1 successfully taken, and the ARC 4 Analysis stands by to take capture #2.

ARC 4

REPEAT CAPTURE: To repeat a capture, select the capture number you want to do again and repeat the process by clicking CAPTURE POINT. While capturing, click STOP CAPTURE if you want to stop the capturing for any reason.

Repeat points 2, 3, 4, 5, 6, and 7 for all captures.

Note that you will not be able to press NEXT until 7 successful captures are taken. Once you are done with the first layer, click NEXT.

4.8.1.2 – Layer 2

Now raise the microphone stand at approximately the ear level and repeat the process that you did for the previous layer. Click MEASURE LAYER 2.
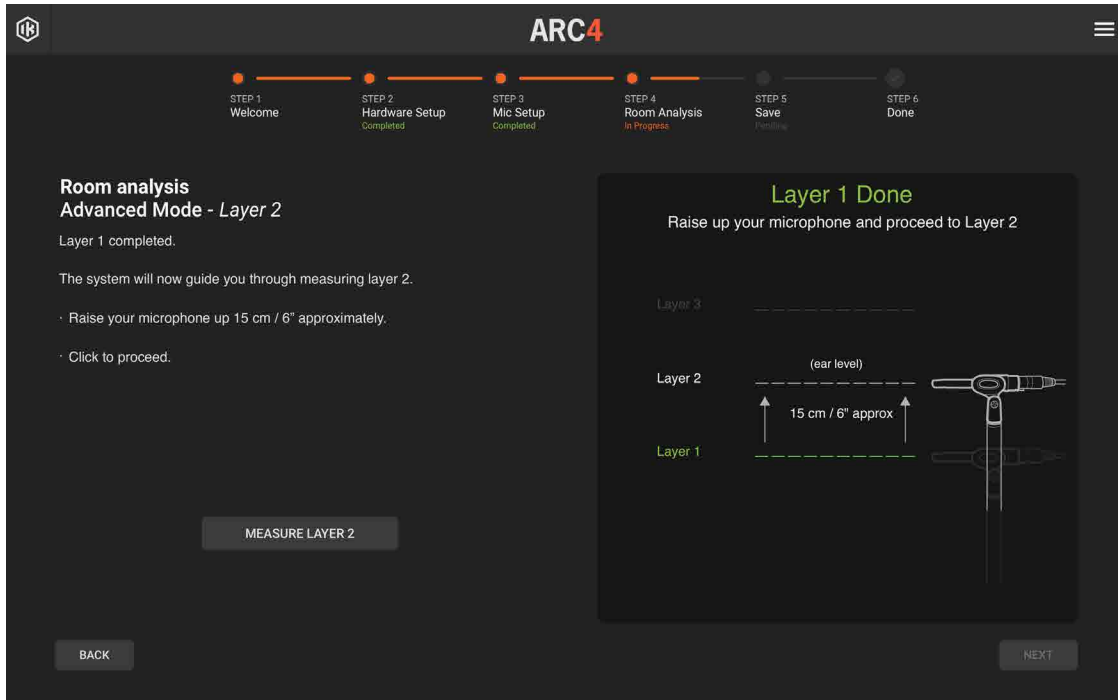
Position the microphone on the main position, number 1 on the image, and click CAPTURE POINT. Repeat points 2, 3, 4, 5, 6, and 7 for all captures.

Remember that you will not be able to press NEXT until 7 successful captures are taken. Once you are done with the second layer, click NEXT.

4.8.1.3 – Layer 3

Now raise the microphone stand to approximately 15 cm / 6″ above your ear level, and repeat the process you did for the previous layer. Click MEASURE LAYER 3.
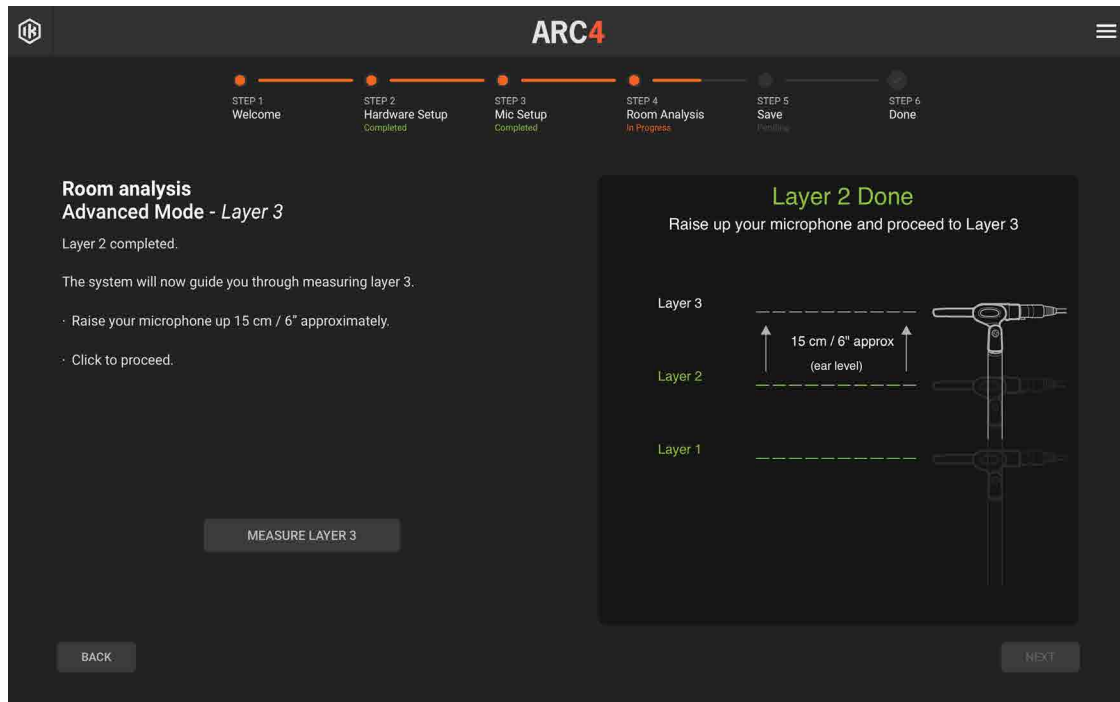

Position the microphone on the main position, number 1 on the image, and click CAPTURE POINT. Repeat points 2, 3, 4, 5, 6, and 7 for all captures.
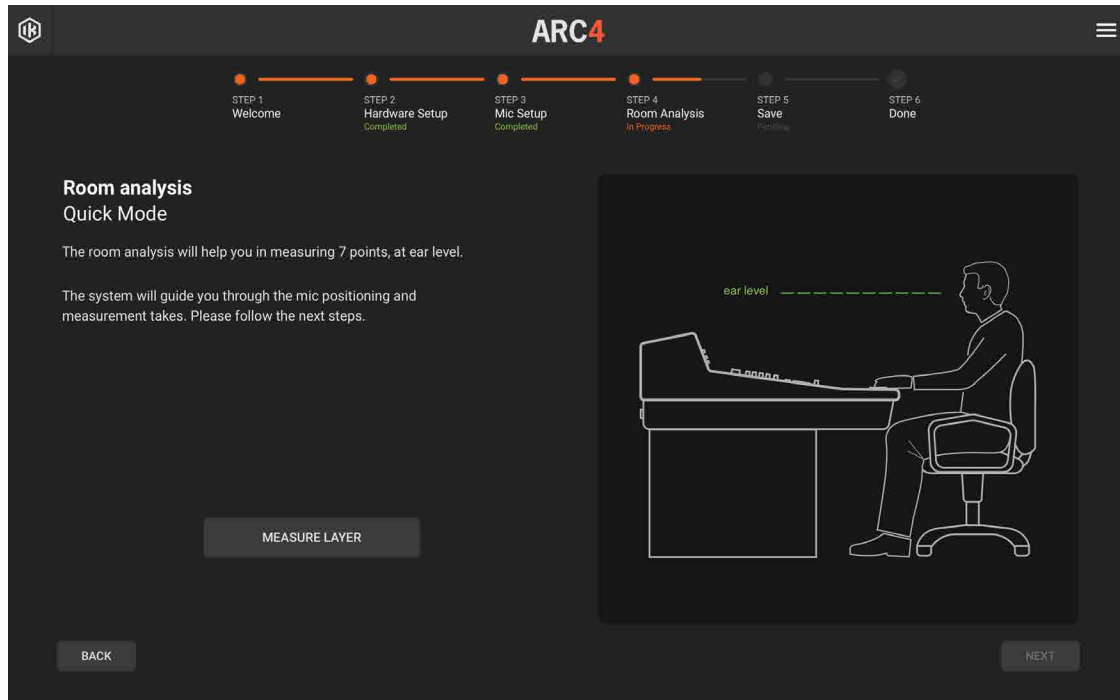
Remember that you will not be able to press NEXT until 7 successful captures are taken. Once you are done with the second layer, click NEXT.

Once you have completed the process, click NEXT to proceed.

ARC 4

4.8.1.4 – Room Analysis – Quick Mode

Set the microphone stand at the ear level.

The image on the right shows the room environment that you selected in chapter 4.5, indicating 7 positions (numbered from 1 to 7) to follow within the analysis process. Position number 1 is always the main position and the first place to put the microphone stand.

IMPORTANT NOTE: The suggested analysis positions are not mandatory. You should follow them as they will always provide good, balanced, guaranteed results. However, if you like experimenting, you can also try different patterns, always bearing in mind to keep them symmetrical with the initial central point.

For example, you can take your points narrower and generally closer to your central sweet spot if you always work very close to the central sitting position, or vice-versa you can make them larger and analyze a wider area if you typically move more across the desk. As a general rule, always bear in mind that the closer the analyzed area is, the more precise and linear the monitoring system will perform in that specific spot. And vice-versa, the wider the analysis is, the more broad and "averaged" the response will be in that larger area. Of course, this will make a single spot in that area slightly less precise and linear.

Follow these simple steps to properly analyze the room.

ARC 4

Preparing to analyze:

DO NOT CHANGE ANY OF THE LEVELS THAT HAVE BEEN SET AT PREVIOUS POINTS IN THE WALK-THROUGH.
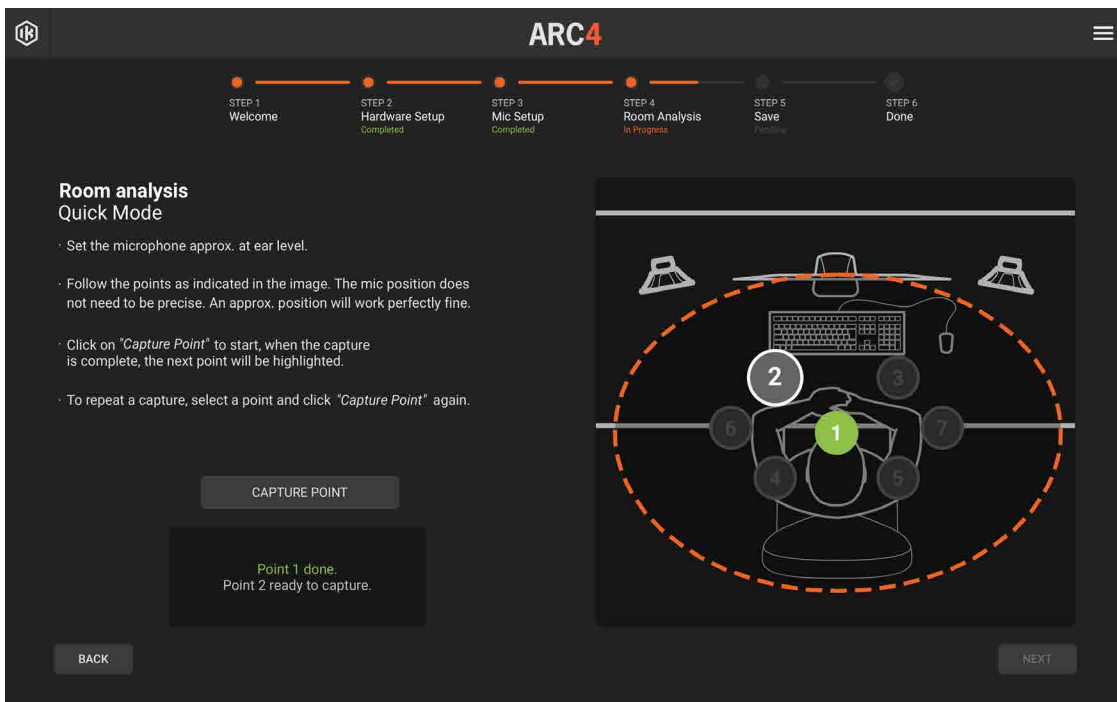
Quiet the room as much as possible (e.g., if you are using a fan and/or air conditioning, turn it off while analyzing your room). Be sure that the room doors or windows are set the same as during your usual listening. For example, don't close the main door when capturing if this door is never closed while you are working or vice-versa. If you usually work with a few people at each session, try to measure the room in the same conditions.

Taking the captures:

Place the measurement microphone in the main position.

Click CAPTURE POINT. Do not make any noise during the analysis process. A chirp will be played 4 times on the left speaker and 4 times on the right speaker for each capture. Do not walk, talk, or move while the chirps are playing or during pauses between the chirps. Do not touch the microphone until the ARC 4 Analysis display says "Done" and the white circle has moved to the next capture number.

When a capture has been successfully taken, its number is highlighted in green, and the white circle moves to the next one. This picture shows capture #1 successfully taken, and the ARC 4 Analysis stands by to take capture #2.

REPEAT CAPTURE: To repeat a capture, select the capture number you want to do again and repeat the process by clicking CAPTURE POINT. While capturing, click STOP CAPTURE if you want to stop the capturing for any reason.

Repeat points 2, 3, 4, 5, 6, and 7 for all captures.

Note that you will not be able to press NEXT until 7 successful captures are taken. Once you are done, click NEXT.

4.9 – Save your correction

Once all captures have been taken, you will see this screen.
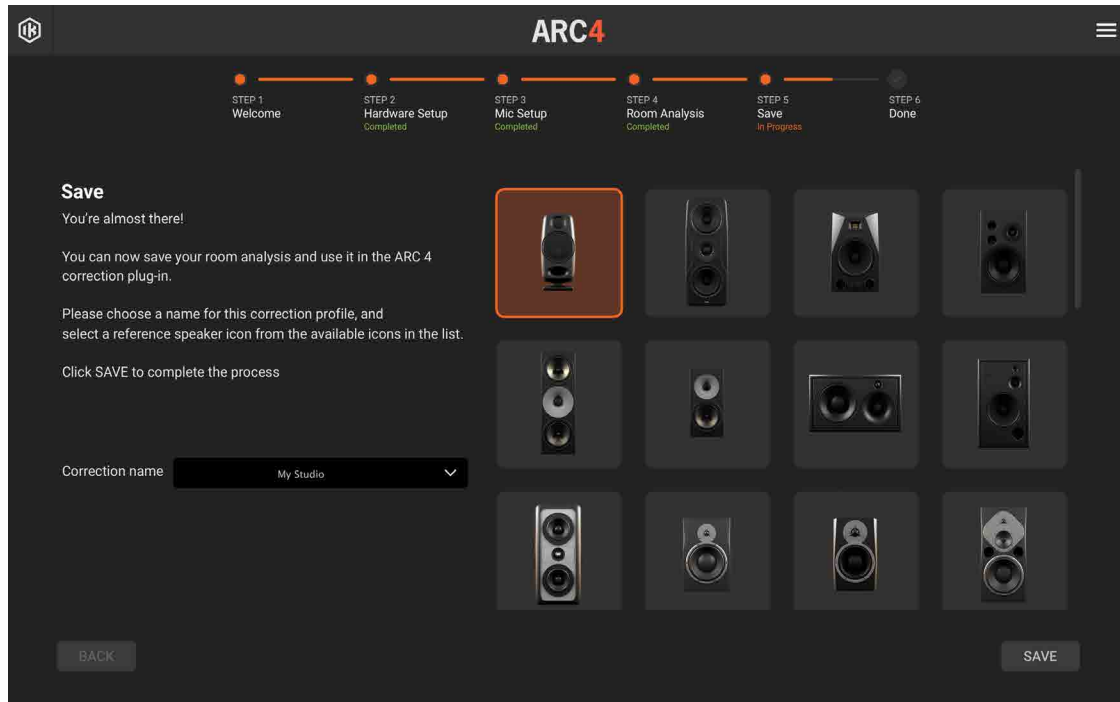
Correction Name: Click this field, and then name the recently taken measurement set. You can analyze several speaker sets or various listening conditions and give different names to each of them. This feature is very useful because you will be able to instantly recall different measurement sets in the ARC 4 plug-in to match various needed monitoring requirements.

Speaker icon: After naming your measurement set (and before pressing the SAVE button), you can choose your preferred speaker icon which will then be displayed in the plug-in GUI. This is just a mnemonic aid to easily recall and associate your speakers with a particular measurement set. It does not affect the sound in any way.

Save: Once you have named the correction and selected an icon speaker from the list, click SAVE to proceed. You will then see the DONE page.

4.10 – DONE!

Congratulations! You have completed your Analysis!
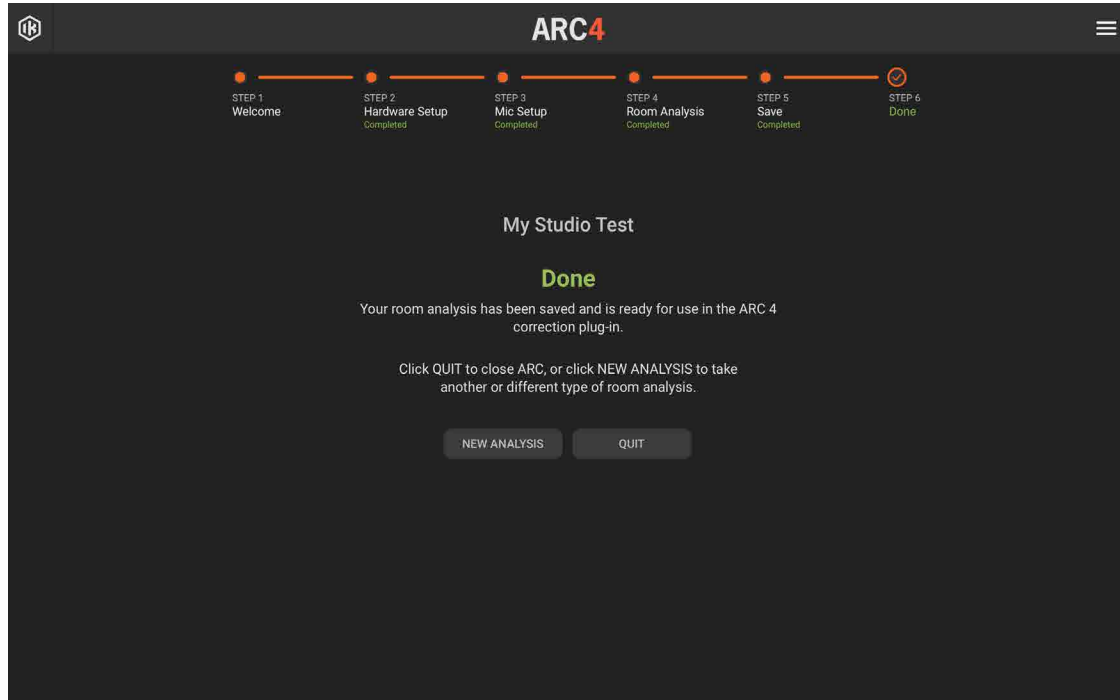
Click NEW ANALYSIS to go back and start with a new analysis, or click QUIT to close the application. Now open the ARC 4 plug-in on the master track of your favorite DAW and hear the difference!

PLEASE NOTE: Each analysis file saved by ARC 4 Analysis will be accessible from macOS and Win via the following folders:

- Windows: C://Documents/IK Multimedia/ARC System 4/AnalysisResults
- macOS: Macintosh HD/Documents/IK Multimedia/ARC System 4/AnalysisResults

IMPORTANT NOTE: ARC 4 is NOT backward compatible with measurement files taken and used with previous ARC System versions (ARC 2 and ARC 3) due to the new algorithm improvements.

5 – Using the ARC 4 Plug-in

5.1 – ARC 4 plug-in interface

The ARC 4 plug-in is a multiplatform audio processor that applies the correction curve measured with the ARC 4 Analysis application to the incoming audio stereo signal in real-time. It is comprised of two operation windows, each dedicated to specific tasks: Play and Edit.

5.1.1 – Play Window

This window is where you can view how ARC 4 is performing the correction on your monitoring:

The ARC 4 plug-in applies one of the measurement sets you have saved from the ARC 4 Analysis application on your stereo master bus to match several different target curves. You can switch from one measurement set to another allowing you to compare your saved options to meet your various sonic needs.

It will also show graphical frequency responses for the left and right channels both before and after the correction. The left and right channels are individually selectable by clicking on the colored tiles above the graph.

The ARC 4 plug-in alters the stereo master bus level. For this reason, a precision peak meter with several metering options is included to show both input or output levels (pre/post) so that the actual project master level can still be kept under control. Derived directly from the internationally acclaimed T-RackS 5 metering, this high-quality metering section offers PEAK, RMS, Loudness (LUFS), and Dynamic Range (DR) indications for both the PRE and POST processing signals.

Using the ARC 4 Plug-in

ARC 4

5.1.2 – Measurement menu

Click this menu to select the measurement set you saved from the ARC 4 Analysis application.

IMPORTANT NOTE: ARC 4 is NOT backward compatible with measurement files taken and used with previous ARC System versions (ARC1, ARC2, and ARC3) due to the new algorithm improvements.

ARC 4

5.1.3 – Target Curve menu

ARC 4 comes with 9 factory-tailored target curves suitable for most situations. The "Default" one is for optimal balanced results, plus "Flat" and other specific ones for different specific needs or setups.

You will notice that the Default target curve, which is the one that is automatically generated by the system, is not flat, but has a small boost in the low frequencies and a very small attenuation in the high frequencies. This defines the system target curve that will be optimal for most acoustic spaces and with most studio monitors, without appearing too bass shy or too harsh. This is because most closed acoustic spaces naturally tend to boost the low frequencies by a certain amount, and for our hearing system some of this natural boost has to be preserved in closed spaces after the correction, to avoid the space sounding too thin or dry. The important aspect of this is that after the ARC optimization the low frequency slight boost will be even and uniform, and musically coherent, and not "spikey" or disorienting as when the room is not corrected.

Click this menu to select one of these Target Curves:

- Default
- Flat
- Standard Control Room

- Lively Room
- Lively Room 2
- Control Room Contour

- Dolby Atmos Target
- Warm Tilt
- Bright Tilt

The other Target curves are defined as follows:

FLAT: This one produces a totally flat free field frequency response from the system, at the listening position. As said this might result to our ears a little dry or bass-shy in closed spaces, as for example a typical control room, that's why this is not the default one. In any case, it can easily be selected for those users who prefer having an instrumental flat response.

DEFAULT: This one produces a slight boost in the low end and a very small attenuation in the high frequencies. This is useful to "rebalance" the correction for most closed listening spaces like control rooms. This is because closed spaces tend to boost the low frequencies and our hearing system is used to that gentle tilt..

STANDARD CONTROL ROOM: This one takes into account the typical slight bass and mid-bass boost you normally find on nearfield monitors when placed on the top of a console, or immediately behind it on stands, and recreates it after the correction, to make this setup sound more familiar even after the calibration, still removing unwanted and disorienting low-frequency resonances and spikes/dips.

LIVELY ROOM 1 and 2: These ones are mostly intended for reverberant rooms, like home theaters and living rooms, or studio live rooms where the natural reverberation of the room has a certain damping on the high frequency, which should be retained after the calibration to avoid the system to sound too harsh.

CONTROL ROOM CONTOUR: This is similar to STANDARD CONTROL ROOM, but it also implements a slight attenuation of the extreme high end. It's especially suitable in control rooms that have a certain liveness in the acoustics.

DOLBY ATMOS TARGET: This replicates the suggested target curve for Dolby Atmos for music monitoring.

WARM TILT: This is a generic warm response, suitable for reverberant rooms with lots of reflective surfaces like big windows or reflective material in general, where the correction could push the system to sound a bit too harsh.

BRIGHT TILT: This is a generic bright response, useful in very damped rooms and when the speakers are very close to the listening area, where the correction could result in an slightly "dark" sound.

8 user-definable curves are also available and reflect the settings of their corresponding selections in the EDIT page of the plug-in.

5.1.4 – Virtual Monitoring feature

For a fast and convenient check of how your mix translates in various "real world" conditions, we've provided a brand-new set of more than 20 alternative speakers and device responses which are listed in the Virtual Monitoring menu. These additional curves are real frequency responses of professional and consumer devices (renowned and popular studio monitors, typical hi-fi speakers, TV sets and smartphones) which will let you audition how your mix translates with many different listening setups.

Since the sonic signature of those alternative systems is played over a perfectly calibrated system with ARC 4, the result will be like mixing in a transparent and balanced room with different speakers.

5.1.5 – Frequency Response graphs

The ARC 4 plug-in shows two frequency response graphs, one for the left channel and one for the right channel. Each frequency response graph is individually selectable by clicking on the colored tiles above the graph and showing the three color-coded curves.

GREEN CURVE (Before): This represents the original measured speakers/room frequency response.

ORANGE CURVE (After): This represents the corrected speakers/room frequency response.

WHITE CURVE (Target): This represents the selected Target Curve. The target curve is by default slightly bass-boosted as explained above in this manual. If other target curves are selected, their response will be shown here.

RTA: ARC 4 plug-in provides a real-time analyzer which can be activated or deactivated by pressing the RTA button on the top right corner of the graph. The real-time spectrum analyzer shows how your music was interacting with your room before correction.

5.1.6 – Speaker Icons

The ARC 4 pplug-in shows the speaker icon that was chosen when the analysis was saved in the ARC 4 Analysis application. This is useful to identify and recall the measurement sets already taken and their association with a real speaker model. Note that the speaker icon selection is just a mnemonic aid and does not interact with the sound of the ARC System 4 in any way.

ARC 4

5.1.7 – Meter Options

These precision Meters shows the INPUT level (unprocessed) or OUTPUT (processed by the ARC 4 correction).

On the Meter, click PRE to check the unprocessed input signal level. This mode is very useful to keep the actual stereo master level of your project under control. Remember that ARC 4 is changing the stereo master peak level, so the DAW output meters will not show the actual real level anymore. Use the ARC 4 Meter in PRE mode to monitor the actual project level.
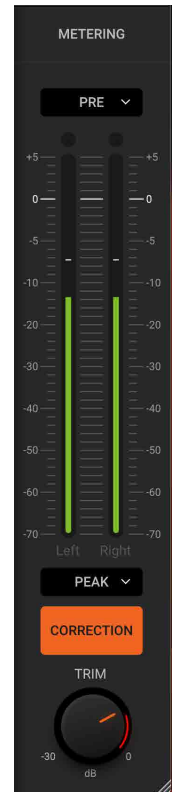
On the Meter, click POST to check the ARC 4 processed signal level.

Also, Derived directly from the world-acclaimed T-RackS 5 metering, this high-quality metering section offers PEAK, RMS, Loudness (LUFS), and Dynamic Range (DR) indications for both the PRE and POST processing signals. Click on the metering options button as shown in the figure.
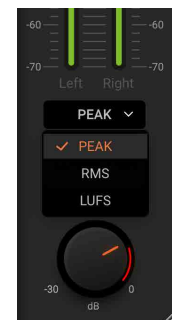
5.1.8 – Correction ON switch and TRIM knob

To enable the correction, click the CORRECTION ON switch. When it is lit, the correction is active.

TRIM knob: The TRIM knob affects both the corrected and uncorrected sound so you can use it to compare the "before" and "after" monitoring at an equal loudness. The system allows the Trim control to detect the maximum boost level in the correction filter. So, every time you edit parameters that affect or alter the filter correction, or every time you select a new measurement set, the Trim will provide a dynamic red band to indicate the level above which you should not exceed. Each time the filter is re-calculated, the dynamic red band will update accordingly.
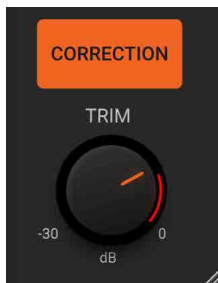

The TRIM knob has a range from -30 to 0 dB and the default position when opening the ARC 4 plug-in is the point of intersection between the grey band and red band, which is the middle position just before you go risk clipping.

5.2 – Edit Window

The ARC System 4 correction plug-in allows for more flexibility and superior sonic results when compared to previous versions.

You can use the controls in the Edit window to adjust the correction to your taste by using Lo/Hi Range controls, variable resolution (or Smoothing), Linear or Natural phase options, or dragging the 6 breakpoints in the graphic for gentle tone-shaping while still getting all the benefits of the ARC 4 correction.
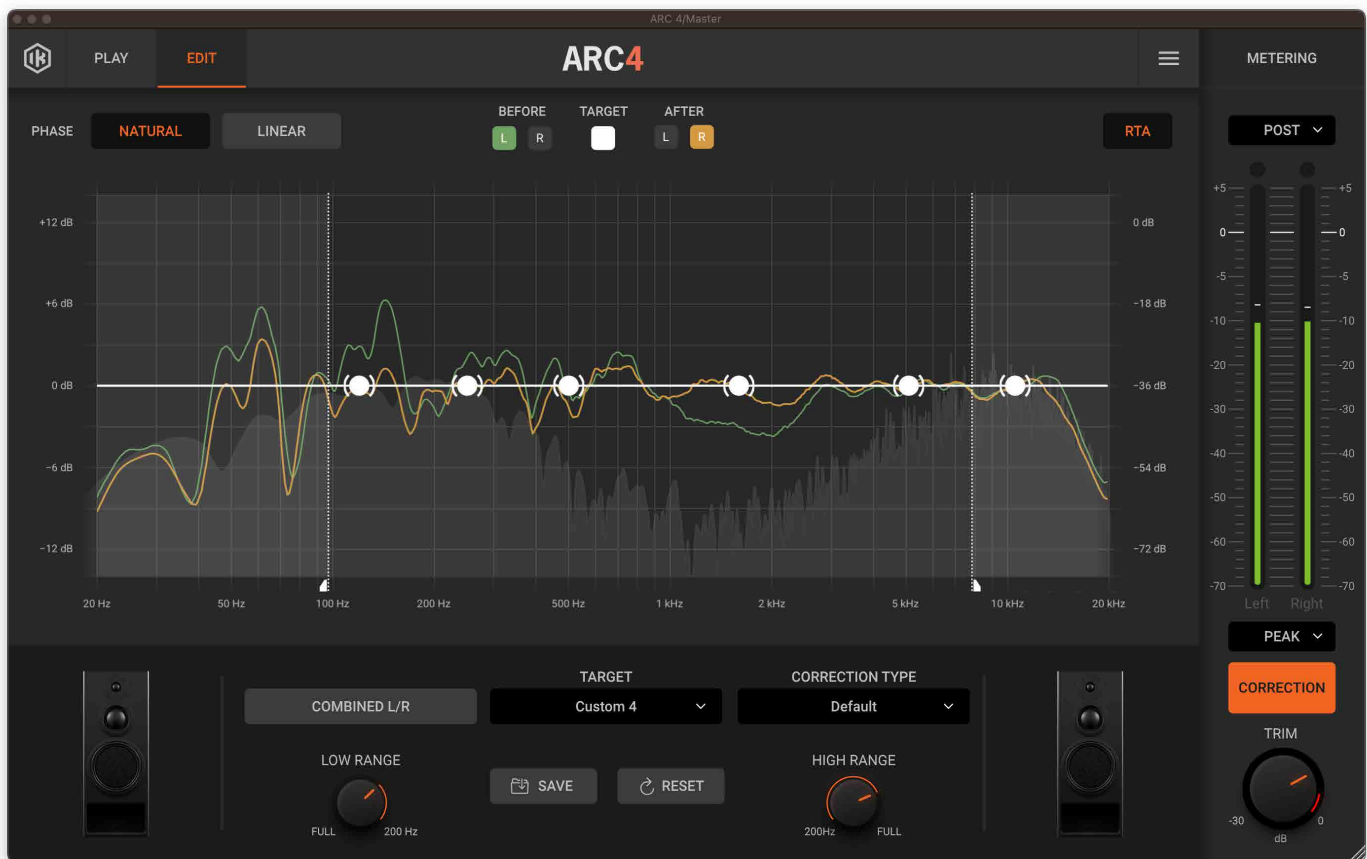
Using the 6 breakpoints in the graphic will not alter the correction ARC 4 has applied to your monitoring setup (as you might think at first glance). It will instead allow for more tonal options to suit your listening preferences.

ARC 4

5.2.1 – Using the breakpoints on the graphic

Drag these breakpoints on the X/Y axis to boost or cut at the desired frequency.

The maximum range is +/-6 dB. To reset the dots to 0 dB, press them while clicking Command on macOS or Ctrl on Windows.

ARC 4

In addition to the factory target curves described in this manual at paragraph 5.1.3, you can dial in and store 8 user ones.

You can use these customizable settings to adjust your personal listening preference or to better suit different program materials. These curves will retain the chosen settings after the "Save" button has been clicked (see below). The corresponding frequency response will also be shown in the "Play" window graphs.
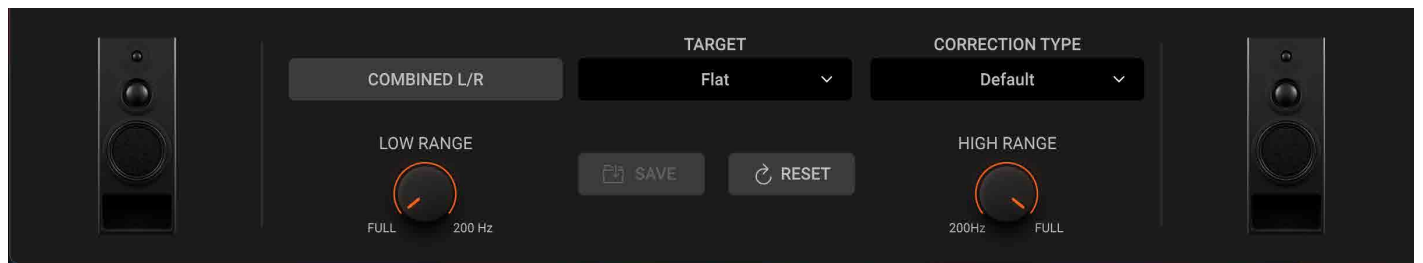
Using the ARC 4 Plug-in

5.2.2 – Save button

Once you have defined your Custom Curve, you can use this button to permanently store it in the selected 1-8 slot.

5.2.3 – Default button

Use this button to reset the graphic curve to its standard flat state.

ARC 4

5.2.4 – Combined L/R correction

In most cases ARC 4 considerably improves the stereo image precision, and so the center ghost image which will become dramatically more precise with ARC 4 correction ON.

However, for strongly asymmetrical rooms, where the low frequency response on a channel is very different from the one of the other channel, you might notice a certain amount of phase incoherency on the low frequencies between the two channels, when the correction is ON.

This can be solved by using the "Combined L/R Correction" function.

When this option is selected, ARC 4 will average the correction required by the L/R channels and then apply it the same way to the two channels. While this from a theoretical point of view is a compromised solution, for certain strongly asymmetrical acoustic setups can be actually beneficial.

5.2.5 – Low-range and Hi-range correction

The correction is by default applied to the whole spectrum, from 20 to 20 kHz.

However, it is possible to limit the range where the system applies the correction on both sides (Low and Highs) of the spectrum. This can be for example useful to retain the voicing of the monitors when this is preferred, still being able to correct the issues generated by the room at low frequencies, or when it is preferrable to have the system to avoid overboosting the low frequencies too much, making for example, the correction to start at a higher frequency than 20 Hz, for example 50 Hz.

Move the Low and Hi Range knobs and the two corresponding lines on the graph will move accordingly.

5.2.6 – Correction Type (or Variable Resolution)

The default setting of ARC 4 will work fine in most cases, however not all rooms react the same to the correction process. With this control, the system offers the possibility to adjust the resolution of the correction filters smoothing, allowing the intervention to be more narrow-band and selective or smoother and more broadband.

This has a subtle effect, but sometimes details make a big difference in monitoring, and this allows the user to manually set the final detail of the automated process to perfectly match the results to personal preference.

From the drop-down menu, select the Default, Sharp, or Broad option, and choose your preferred one by listening to the results of the correction.

| CORRECTION TYPE	
Default	⌄
Sharp	
✓ Default	
Broad	
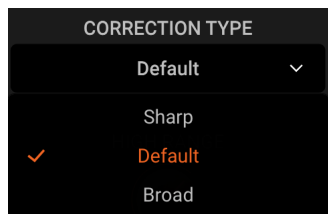
5.2.7 – Natural/Linear Phase Options

Left and Right channel phase coherency is crucial for a quality monitoring system, but sometimes speakers are installed in a less-than-ideal symmetrical arrangement in the room. This can cause severe phase misalignment, especially at low frequencies, between the left and right channels, making it impossible to mix properly (aside from being a less-than-pleasant condition for listening).

NATURAL mode improves the phase coherency between the L and R channels, recovering a better center ghost image that might be compromised by the effects the room has on the sound, especially at low frequencies. This is the default and preferred mode for most applications.

LINEAR mode is a special correction mode where the original inter-channel phase response of the speakers' system is maintained unaltered. In certain cases, this mode can be preferable for even better transparency. However, this mode adds a little bit of latency, around 50 milliseconds.
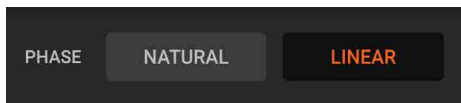
ARC 4

5.2.8 – Settings Panel

Click on the toast icon positioned in the upper-right corner of the interface to access the Settings and Info panels.

SETTINGS PANEL: Here you can set the aspect of the ARC 4 graphical interface, between Dark or Light.

INFORMATION (INFO): By clicking the INFO button, the credit tab will be displayed. Here you can check the version of your ARC 4 plug-in. Clicking the Close button on the credit interface will close the credits and return you to the normal view.

LOCK: If you are running the software in demo mode and you click the LOCK button, the Authorization Manager will appear. However, if you already registered and authorized your product, clicking the LOCK button will simply show you the product serial number.

HELP: Click the "HELP" button to open the .pdf manual.

KEYBOARD MODIFIER: To reset the ARC 4 plug-in knobs to their default values, click them while holding the Command key on macOS or Ctrl on Windows.

5.3 – Opening the ARC 4 Plug-in in your DAW

The ARC 4 plug-in is a "stereo-to-stereo" processor that should be inserted on the stereo master bus of your audio sequencer or digital audio workstation.

The ARC 4 plug-in should remain inserted and active on the stereo master bus during the entire recording, mixing, and mastering processes. **But then just before printing the final mix to a file or an external recording device, it must be turned OFF.**

This is because the ARC 4 plug-in is used to correct the monitoring/room system response. It is NOT intended to process the actual mixdown of your project.

A few DAWs support a dedicated monitoring bus where you can insert plug-ins. In this case, the ARC 4 plug-in should be inserted on the monitoring bus instead of the stereo master bus so that the ARC 4 plug-in will not affect the actual mixdown of your project even if you don't turn it OFF before printing the mix.

Each DAW has its criteria for how to use aux tracks, monitoring buses, master tracks/faders, etc. Therefore, these suggestions for how to start ARC 4 in several host applications are just a starting point, a guideline. For example, if your session already has a master track, you do not need to create another one. Just insert ARC 4 as the last plug-in. We recommend that you read your DAW manual chapters specifically related to outputs, monitoring bus, master tracks, routing configurations, etc.

Considering that DAWs are constantly updated, refer to their User Manuals to learn how to insert ARC 4 as a plug-in.

The ARC 4 plug-in is compatible with VST, VST2, AAX, and Audio Units plug-in formats on both (where applicable) Windows and macOS platforms. Please refer to the Installation and Authorization Manual for further details.

5.4 – Using the ARC 4 Plug-in

Open your DAW.

Create a new session or open an existing one.

Open the DAW audio mixer and locate the stereo master bus. If you are using Pro Tools and your session does not have a stereo master bus yet, create one.

Load the ARC 4 plug-in as the LAST processor on the stereo master bus.

From the measurement menu, select one of your saved measurement sets.

Click the Correction ON Switch. When it is lit, the correction is ON.

If you are using mastering processors (like T-RackS), be sure to insert the ARC 4 plug-in AFTER all the other processors. The ARC 4 plug-in must always be the LAST one in the processing chain.

If your master level is really hot, (very close to 0dB), be sure to not overload the stereo master bus with the ARC 4 processing.

If clipping occurs when checking the ARC 4 Peak Meter in POST mode, use the TRIM knob to lower the level. Keep the ARC 4 plug-in inserted on the stereo master bus throughout the entire recording, mixing, and mastering process.

IMPORTANT: Switch the ARC 4 plug-in OFF before bouncing the project to a disk file. Your final mix should NOT include the ARC 4 processing because it is designed for MONITORING use only.

5.5 – Suggestions for the best ARC System 4 usage

You are probably used to how your studio acoustics sounds and already know how to use ARC.

Just use this information as a reminder, and follow these suggestions to enrich your listening experience while using the ARC System:

Use audio material you know are very familiar with to evaluate the new way your studio sounds.

Always give yourself time to get used to the new sound. Do not judge the corrected system by only listening for a minute or two. Always give yourself enough listening time to understand how different the room sounds.

Do not change between various measurement sets or turn the correction ON / OFF too often. Your hearing system needs to get used to it. It is like when your eyes need some time to adapt to a very different lighting condition such as going out of a dark room into bright sunlight.

After you select the best measurement set, you will start using the ARC System 4 without even thinking it is there. It is a "set and forget" tool that will help you mix faster, and better, and achieve greater consistency with your artistic projects.

6 – Using the ARC 4 Standalone Application

6.1 – ARC 4 Standalone overview

The ARC 4 Standalone application is designed to work together with the ARC Studio hardware to bring state-of-the-art room correction to any speaker system.

ARC 4 Standalone application allows the user to open any ARC4 Analysis measure, edit/trim it and easily store it in ARC Studio.

IMPORTANT NOTE: ARC 4 Standalone cannot be used without ARC Studio.

6.1.1 – Opening the ARC 4 Standalone application

On Windows, go to your Start Menu/Programs and launch ARC 4. On macOS, go to your Applications folder and launch ARC 4.

To continue, at least one ARC Studio unit must be connected to the computer.

If no units are detected a warning will be shown asking the user to connect one.
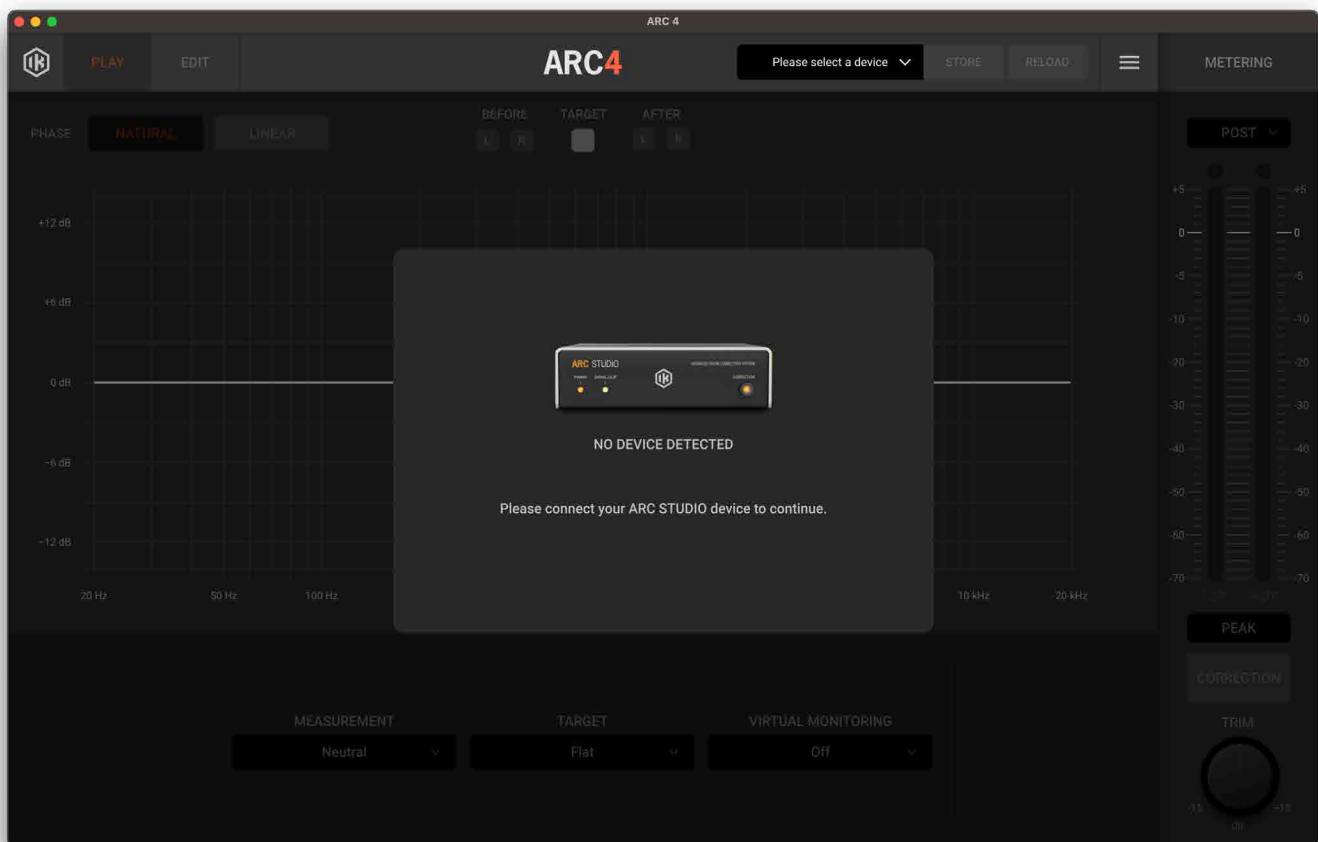
6.1.2 – Firmware update

Each time at launch ARC 4 Standalone scans the USB ports for ARC Studio units. If any unit is detected, its firmware version is read. If an outdated firmware version is detected, the software will prompt you to update the firmware.

Click on the "Update Firmware" button to proceed. A progress bar will appear indicating that the update process is pending. During this firmware update process, the ARC Studio unit LEDs will turn off.
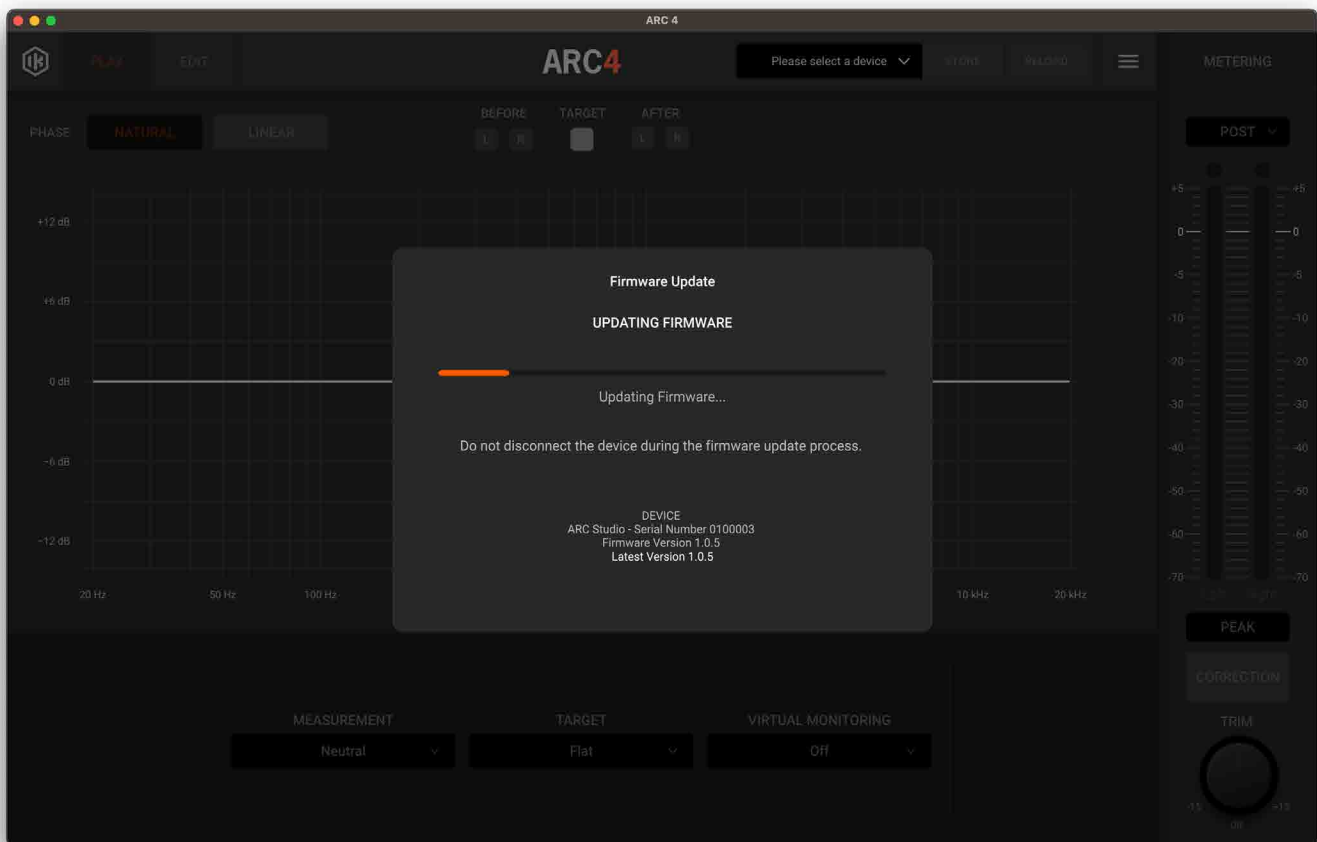

DO NOT INTERRUPT FOR ANY REASON THIS PROCESS. DO NOT TURN ARC STUDIO OR COMPUTER OFF.

DO NOT DISCONNECT THE USB CABLES OR QUIT THE ARC 4 SOFTWARE WHILE THIS PROCESS IS IN PROGRESS AS THIS MAY RESULT IN DAMAGE TO THE ARC STUDIO UNIT.

In the event the update fails, the process will be interrupted and the software might not recognize the unit. In this case, turn the ARC Studio unit off and on again and try the procedure again.

If the problem persists, contact our Support Team. (also see paragraph 6.1.3 for the Recovery procedure)

ARC 4

When the update is completed, ARC 4 Standalone will display this info:
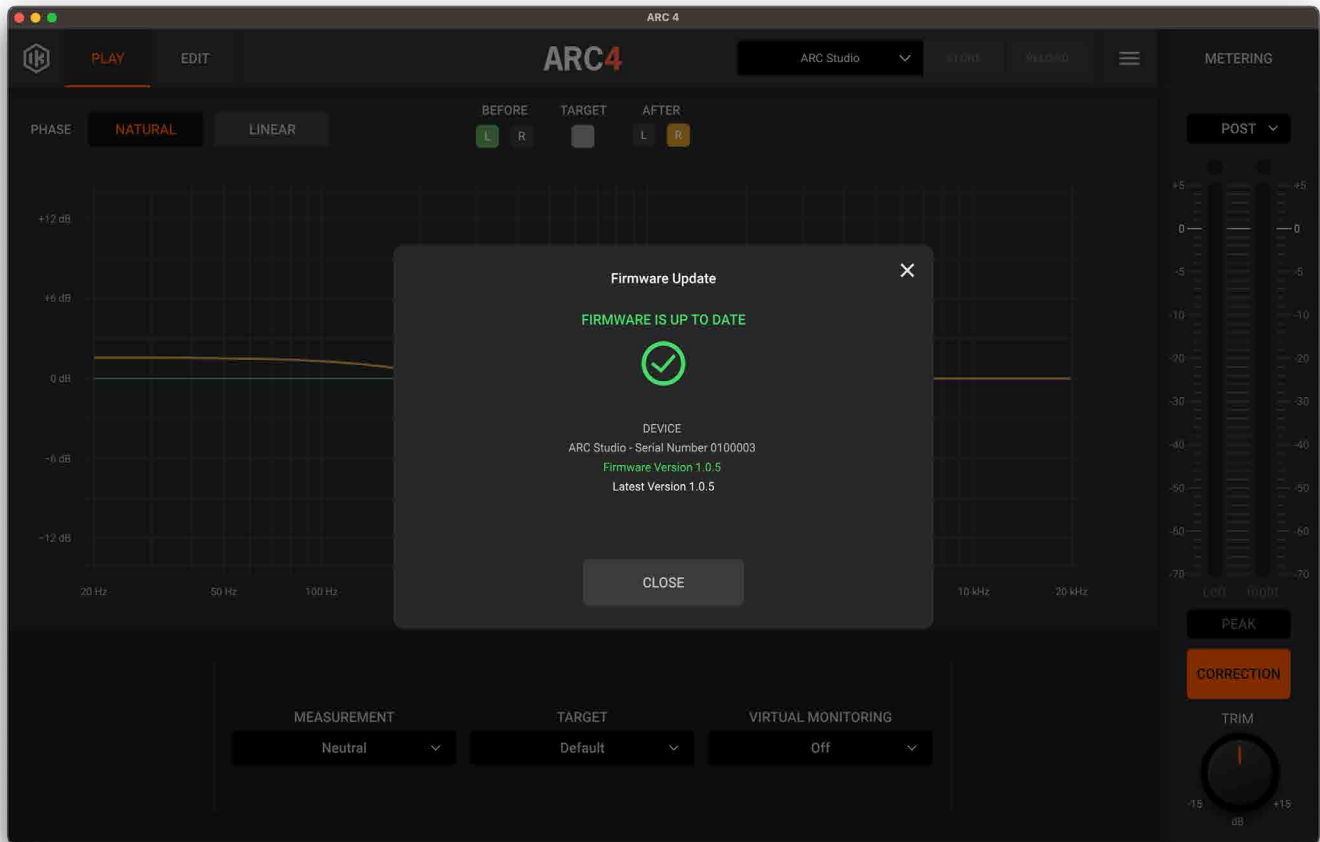
In some cases, the firmware version of ARC Studio may be newer than the software one. In this scenario, when opening the ARC 4 Standalone software, a dialog asking you to update the software through the IK Product Manager will appear.

Close the ARC 4 Standalone and open the IK Product Manager.

Go to the Software tab and click the "Update" button in the ARC 4 tab to download and install the latest version of ARC 4.

Using the ARC 4 Standalone Application

6.1.3 – Recovery mode

In some rare cases, the firmware upgrade process may fail and the ARC Studio unit enters DFU mode. When the unit is in DFU mode all the LEDs are off and the device is listed as "SE Blank RT Family" in the device manager.

While in DFU mode, the unit is not detected on ARC 4 Standalone.

Please proceed as follows to try the Recovery procedure and upgrade the firmware version of the unit:

- Open the Settings panel.
- Click on the Recovery button.
- Follow the onscreen instructions to upgrade the firmware.

Please note: when doing a Recovery procedure, only one unit in DFU mode must be connected to the USB port. Please disconnect all the other units connected via USB before proceeding.

If the Recovery mode doesn't fix the problem on the unit, contact technical support.

Please note: When executing a Recovery procedure, all previously saved settings on the unit will be erased and restored to factory default.

ARC 4

6.1.4 – ARC 4 Standalone interface

The ARC 4 Standalone is the application that is used to set and control the ARC Studio hardware device. It shares the same operativity as the ARC 4 plug-in described in the previous chapter with only a couple of minor changes described in the following paragraphs.

6.1.5 – TRIM Knob

The TRIM knob in ARC4 Standalone serves a different function compared to ARC4 plug-in and therefore features a different value range of ± 15 dB.

On the plug-in, this knob is used to attenuate the signal to avoid clipping the master bus because of the boosts the ARC 4 correction can provide, however, the ARC Studio hardware has plenty of headroom so no attenuation is necessary to accommodate such boosts. The TRIM control can, this way, be used to align various monitoring systems at the same loudness.

6.1.6 – ARC Studio selection and STORE/RELOAD buttons

A dropdown menu and two buttons positioned on the far right of the top bar allow the user to select and control the ARC Studio unit.

ARC Studio ⌄	STORE	RELOAD

ARC STUDIO SELECTION box displays the current ARC Studio unit connected to ARC4.

Clicking this box opens a dropdown menu with a list of all the ARC Studio devices currently connected to the host and their serial number/firmware version.

The STORE button saves the current correction into the ARC Studio memory.

A progress bar appears on the screen while the save process is ongoing.

The SIGNAL/CLIP LED blinks green when the process is completed.

The RELOAD button can be used to discard any change done and re-load the correction currently saved on the ARC Studio unit.

7 – Frequently Asked Questions

7.1 – Room Analysis

Can I use previous room measurements I made with previous versions with ARC 4?

No. Room measurements taken with ARC 1, ARC 2, or ARC 3 are not compatible with ARC 4.

The advanced algorithm in ARC 4 needs more info from the room acoustics that were not captured with the ARC 1 or 2 or 3 measurement process.

What is the best microphone to use with ARC 4?

To get the best possible results in terms of accuracy you should use the ARC 4 MEMS Microphone. With this mic, ARC 4 ensures a precision within +/- 0.5dB, which is a quite remarkable level of accuracy!

It's the best investment you can make for your studio, it's a reasonably priced microphone, and it offers great stability with time and temperature, so it will always deliver the same reliable results over the years.

Are the older ARC microphones (silver metal models) still good for ARC 4?

With normal "recording" microphones the accuracy of the frequency response down to the dB or fraction of dB is not that crucial, but for measurement microphones, it's a fundamental aspect.

There were two models of the original ARC condenser microphone, one with an orange ring at its base, and one without; the first model is from 2007 and it's the one without the orange ring.

Condenser microphones tend to vary their response with environmental conditions and with age.

In 2009 that mic was replaced with the second model (with the orange ring) to improve the stability with time and temperature.

So, if you own one of the original ring-less microphones that were sold between 2007 and 2009, while you can use and hear the results, there are chances that its reliability is not as great as today (15+ years later), making the precision of the ARC 4 correction less accurate.

The second model was more stable, but even that one was surpassed in terms of precision and stability with environment and age by the ARC 4 MEMS microphone.

So, if you're after a great level of accuracy from your monitoring system, make sure to use the ARC 4 MEMS microphone for the room analysis phase.

I have seen that ARC 4 supports 3rd parties "measurement microphones". What exactly is a measurement mic and what is a microphone calibration file?

Measurement microphones (also called RTA mics, or room analysis mics) are particular microphones that are normally not suitable for recording. They are true omnidirectional microphones with an exceptionally flat frequency response used for taking acoustical measurements in spaces. They normally have a very thin and long body shape to minimize the impact of the mic body on the linearity of the frequency response.

ARC 4

Measurement microphones are very linear ones, however, they're not perfectly linear. For this reason, most manufacturers provide a "microphone calibration file", sometimes also called "ECF", usually in a text format (.txt file). This file describes the response of the mic so that it can be loaded into the software that will compensate for it, making the microphone behave as if it were perfectly linear.

I have a recording condenser microphone that can be set to "omni" and has a remarkably flat frequency response. Can I use it with ARC 4?

No.

Normally these microphones are not neutral enough and their polar pattern is not "omni" enough to provide good results in measuring room acoustics.

This said you can always give it a try, if the ARC 4 correction sounds balanced and neutral the mic was fine for the application, however, we strongly suggest avoiding this.

Is it mandatory to load calibration files for the generic measurement microphone option?

No, you can use any measurement microphone even without loading the calibration file.

However, the accuracy in that case will strongly depend on the linearity and overall quality of the mic.

Instead, when loading a calibration file, any issue on the microphone frequency response will be addressed by the calibration, providing more reliable results.

Is the accuracy of the mic positioning during measurement affecting the quality of the results?

Don't tape your floor, that's not needed!

The positioning indications given on the ARC 4 Analysis application during the process are explicative of where the mic should be positioned.

No absolute indications are provided because they are not needed, the mic should be placed approximatively on those spots, really hand-placing the mic stand approximatively at those spots will do.

The quality of the results will only be affected if you place the mic a lot differently than what's illustrated onscreen at the various steps.

Should I use a mic stand for the measurement process?

Yes!

The mic must be as steady as possible and stable during each single measurement spot recording. If the mic moves even a little bit during the recording of each point, the results will be compromised.

Also, there should be nothing moving in proximity to the mic, to the speakers, or between the two while these points are recorded.

Can I stay in the room while the Analysis process is recording each point?

Yes, but try to keep yourself outside the listening spot and not too close to the microphone or the speakers to avoid sound reflections that can compromise the reading.

Should I keep doors and windows closed while analyzing the room?

Doors and windows have a big impact on the frequency response of the room, so they should be in the same state they are when you normally work. If your studio door is normally open then measure up the studio with the open door, and vice versa.

What is the best playback level I should set my listening level to when measuring the room?

Set the listening level so that, when the ARC 4 Analysis application plays the test signal, you get a loudness in the room similar to the one you have when working normally.

There is a considerable level of background noise in my studio, can I measure the room reliably?

In this case, you will need to raise the listening level during the measurement process to get to a decent signal-to-noise ratio during the recording of the points.

Can I experiment with different mic positioning than those indicated by the Analysis application?

We suggest starting with the pattern of points that are indicated by the Analysis application and sticking with them. However, once you are familiar with the results, you can for sure experiment with different positioning.

The main concept to keep in mind is that the system optimizes the monitoring system in the area where the measurement points are taken. For example, you can experiment with taking the 7 points per layer in a narrower or wider spot, and so on.

I have a 2+1 system that includes a subwoofer, how should I measure the room?

If the subwoofer is handling the crossover and feeding the main speakers, or if you are using an external crossover the system will be seen as a normal 2-channel setup, so you can use ARC 4 without any issue.

ARC 4 will also adjust the level of the LF range matching it perfectly with the main speakers.

Are the quality of the audio interface and mic preamp used for the room analysis important for the result's accuracy?

Generally speaking, yes. Anything wrong that might happen during the room analysis process will translate into the response of the final system. The interface used for analysis should at least have a flat frequency response (+/-0.5 dB) up to 20 kHz and down to 20 Hz and be able to operate at 48 kHz. Clean preamplifiers are preferred for this process. If possible, try avoiding using tube preamps for the measurement mic, vintage ones, or ones that add too much harmonics/coloration to the sound as this will affect the accuracy of the results.

7.2 – Processing Plug-in

How should I use the correction plug-in in my DAW?

The correction plug-in should be inserted on the stereo master bus of your project or, when this is available, on the monitoring bus of the DAW. Unless your DAW allows for inserting the plug-in on a monitoring bus, remember to ALWAYS switch off the ARC 4 plug-in before exporting/bouncing/rendering the program from the DAW. The ARC 4 plug-in should always be the last in the chain on your master bus. If you use master-bus processing like EQ, compression, limiting, and so on, make sure the ARC 4 plug-in always comes after those.

How much latency is the ARC 4 plug-in adding to the system?

The ARC 4 correction plug-in can work in two-phase modes: NATURAL and LINEAR. NATURAL has a latency of 64 samples, LINEAR has a higher latency of 2100 samples.

8 – Troubleshooting

Where can I find my IK product Serial Number?

The Serial Number is written on the Registration Card (included with your IK product) or in the email you received from DigitalDelivery@ikmultimedia.com (if you purchased the product as a 'Downloadable only version').

IMPORTANT: the number zero can easily be identified in your Serial Number because it is crossed by a line.

Why is the IK Product Manager rejecting my Serial Number?

Probably because of a typo, here are some common errors:
- Typing a 0 ("zero" number) instead of an O ("o" letter).
- Typing 1 ("one" number) instead of an I ("i" letter).
- Typing 2 ("two" number) instead of a Z ("z" letter).
- Typing 5 ("five" number) instead of an S ("s" letter).
- Typing 8 ("eight" number) instead of a B ("b" letter).
- Typing a "." (point) instead of a "-" (minus).
-

Suggestions:
- If possible, copy and paste the information.
- Cut off all the leading and trailing spaces.
- Please type all codes in UPPERCASE during the installation and registration process.
- Check that the Serial Number that you are entering is in correlation with the product installed.

How can I authorize my product on another computer?

To authorize your product on another computer just follow these instructions:
- Install the product and the IK Product Manager on that computer
- Run the IK Product Manager

I need to log in to the User Area but I forgot my User Name and Password. What should I do?

You can retrieve your User Area login details in two different ways:
- Open the IK Product Manager click on the 'Forgot password?' button and submit your email address. Your login details will be sent to your email account.
- Go to www.ikmultimedia.com, click on 'I forgot my username and/or password' and submit your email address. Your login details will be sent to your email account.

ARC 4

I just bought an IK Multimedia software. What should I do to register and authorize my new product?

Just run the IK Product Manager and follow the instructions.

In case you don't have the IK Product Manager, you can download it for free from the Products page of our website at: www.ikmultimedia.com/productmanager

While analyzing the room, I got error messages from the ARC 4 Analysis application related to the low signal and high background noise. As a result, I can't complete the analysis process. What should I do?

Quiet down the room as much as possible or increase the test tone playback level during the analysis process. Also, check the microphone level again and repeat the capture.

While analyzing the room, I got "phase" errors from the ARC 4 Analysis application.

Please check your speaker's wiring. If the speakers are passive, check the polarity of the leads going from the amps to the speakers. If the speakers are active, check the XLR or TRS cable connections and polarities.

When I open the measurements set on my ARC 4 plug-in and turn the Correction ON, the resulting sound and the displayed response are strange and incorrect, making the monitors sound worse than when the ARC 4 plug-in is not enabled. Do you have any suggestions?

Be sure that your audio interface is set to 48 kHz when running the ARC 4 Analysis application. Also, check your audio interface buffer size settings. It should be set from the minimum supported by the hardware (best option) to 2048 samples for a proper analysis.

I am trying to set the microphone levels on the ARC 4 Analysis application. However, even if the test signal is being played back from the speakers, I cannot see any level. What should I do?

Please check which audio input has been selected on the ARC 4 Analysis Application Audio Setup page, if the +48V phantom power is ON, and if the XLR cable is properly connected, (eventually, check if the cable is in good condition).

When I open the measurements set on my ARC 4 plug-in and turn the Correction ON, the resulting sound is not optimal, and I don't feel it is correct for my monitors and my room.

Please read carefully the ARC System 4 User Manual (Chapters 3 & 4), and repeat the analysis process.

ARC 4

When I open the measurements set on my ARC 4 plug-in and turn the correction ON, the resulting sound and the displayed response are strange and incorrect, making the monitors sound worse than when the ARC 4 plug-in is not enabled. Do you have any suggestions?

Please check if the measurement microphone is working, by connecting the microphone to a +48V phantom microphone preamp and listening to it through headphones. The microphone should exhibit a neutral, clean sound. If the microphone is not working, producing loud noises, or having a very weak output signal, contact IK Multimedia Technical Support.

9 – Support

For any questions you may have, please refer to the FAQ webpage at:
www.ikmultimedia.com/faq

Here you will find answers to the most commonly asked questions.

To submit a Technical Support Form, go to:
www.ikmultimedia.com/support

For warranty information, please visit:
www.ikmultimedia.com/warranty

For other requests such as Product, Sales, or Web info, please go to:
www.ikmultimedia.com/contact-us

User Area

The User Area is a special section of our website specifically designed for our users.

Here you can easily edit your personal data, manage your product authorizations and licenses, and download the latest IK products updates.

Access your User Area to:

•   Edit your Personal data.

•   View and download the latest product updates, free content, and Sound Libraries.

•   Access any current Promotions.

•   View exclusive offers and pricing.

•   Manage your earned JamPoints.

•   View your Orders.

•   Download firmware and hardware drivers.

•   Access the IK Forum and more.

To access the User Area go to:
www.ikmultimedia.com/userarea

To access your User Area, please login with your User Name and Password created upon registration and emailed to your registered email address. If you need to update your Password, you may do so at the User Area login.

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