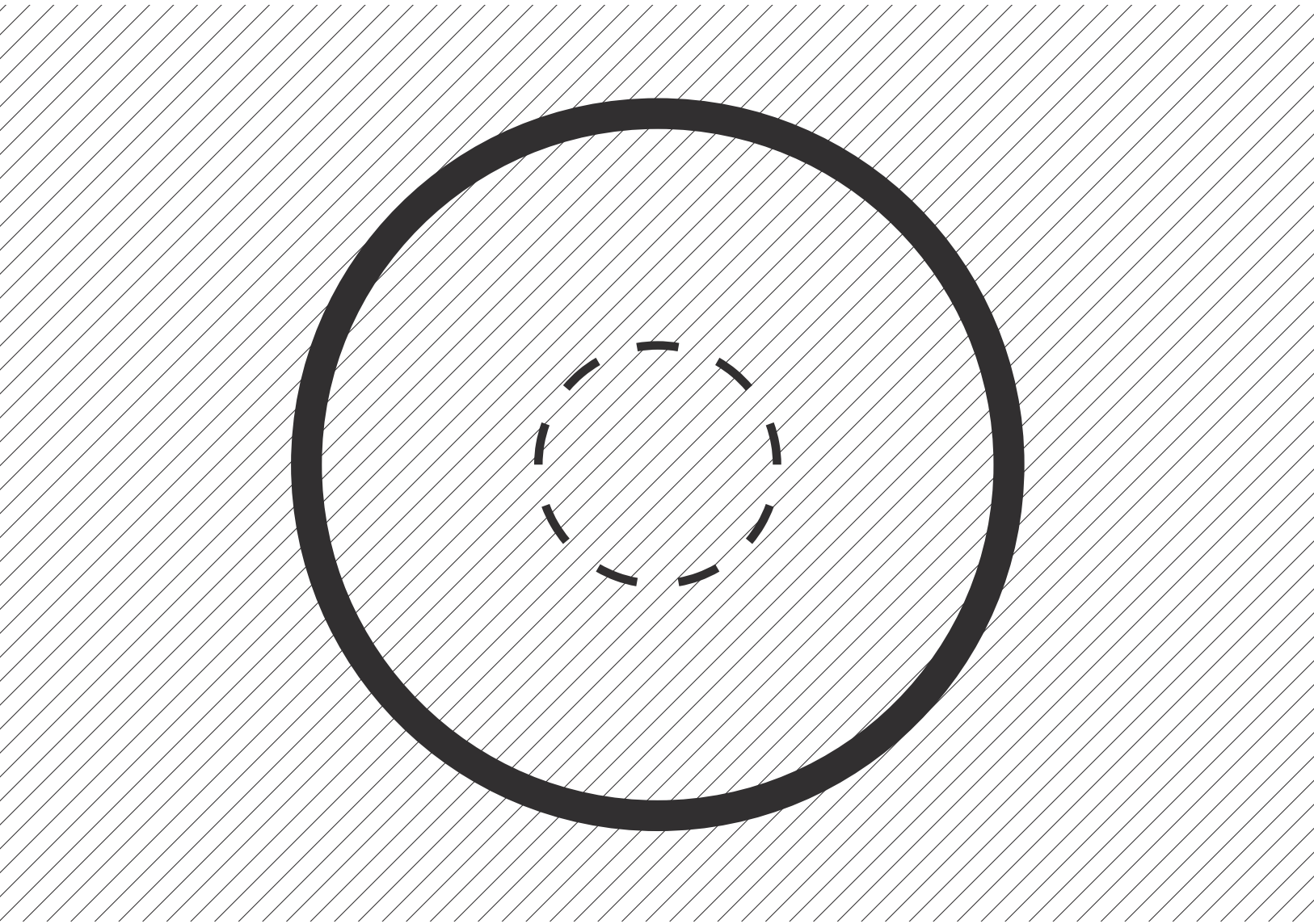


DYNAUDIO Core

User manual

DYNAUDIO Core

Introduction

Welcome and congratulations on your purchase of Dynaudio Pro Reference Monitors.
Each monitor is constructed by Dynaudio in Denmark to meet only the highest standards. These monitors are a key part of your monitoring system, but remember that monitor performance is also affected by how they are placed in your room.
Spend the necessary time on placing and tuning your new monitors just right and your audio will be reproduced with great accuracy.
Please follow the instructions carefully to get the very best performance from your new Dynaudio Pro monitors.
When your monitors are installed properly and the rear panel settings are adjusted to fit your acoustic environment, your mixes will translate effortlessly to other playback systems – including cinemas, home theatres, car stereos, and headphones.

Other resources
Please also visit our website dynaudio.com/support.
Here, you will find additional information including:
▶ Q&A's on Dynaudio products and technical information
▶ Dynaudio events and news

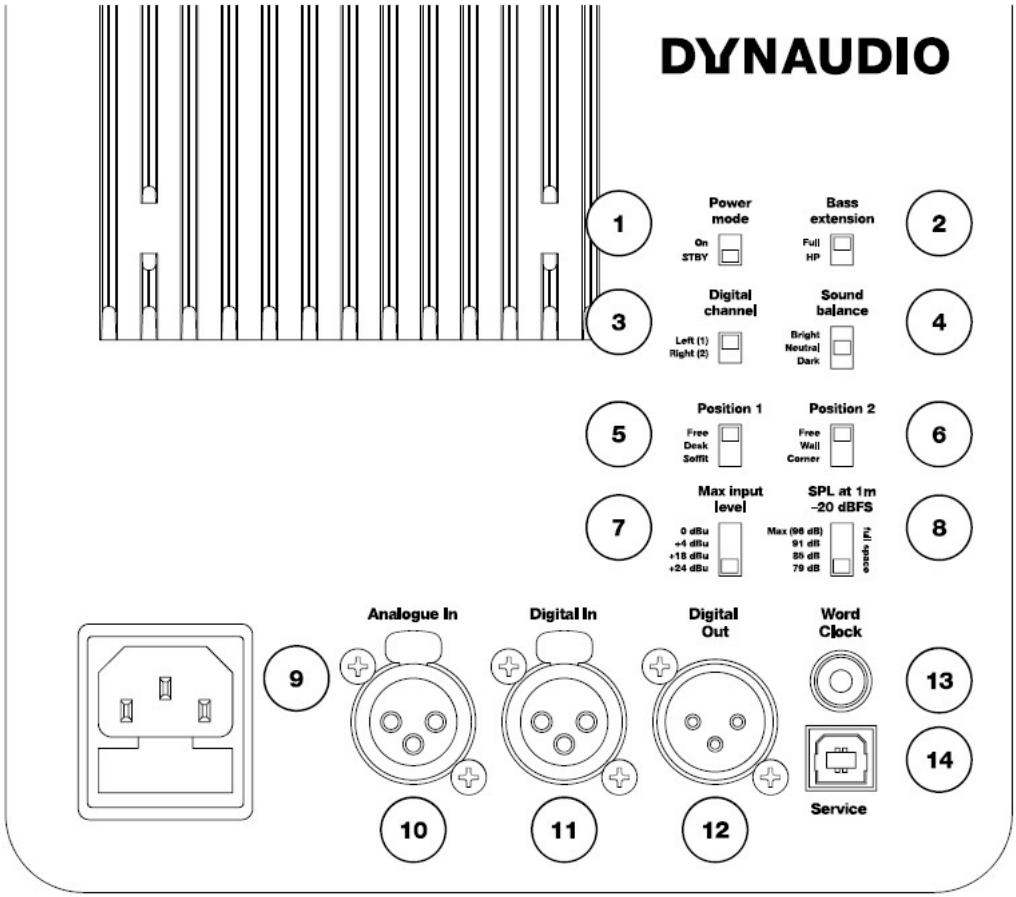
Important safety information
A separate "Important safety instructions" document is also included with the product. Please make sure to read it carefully before operating your new monitors.

Core 5, 7, 47, 59 monitors, Core Sub and Core Sub Compact

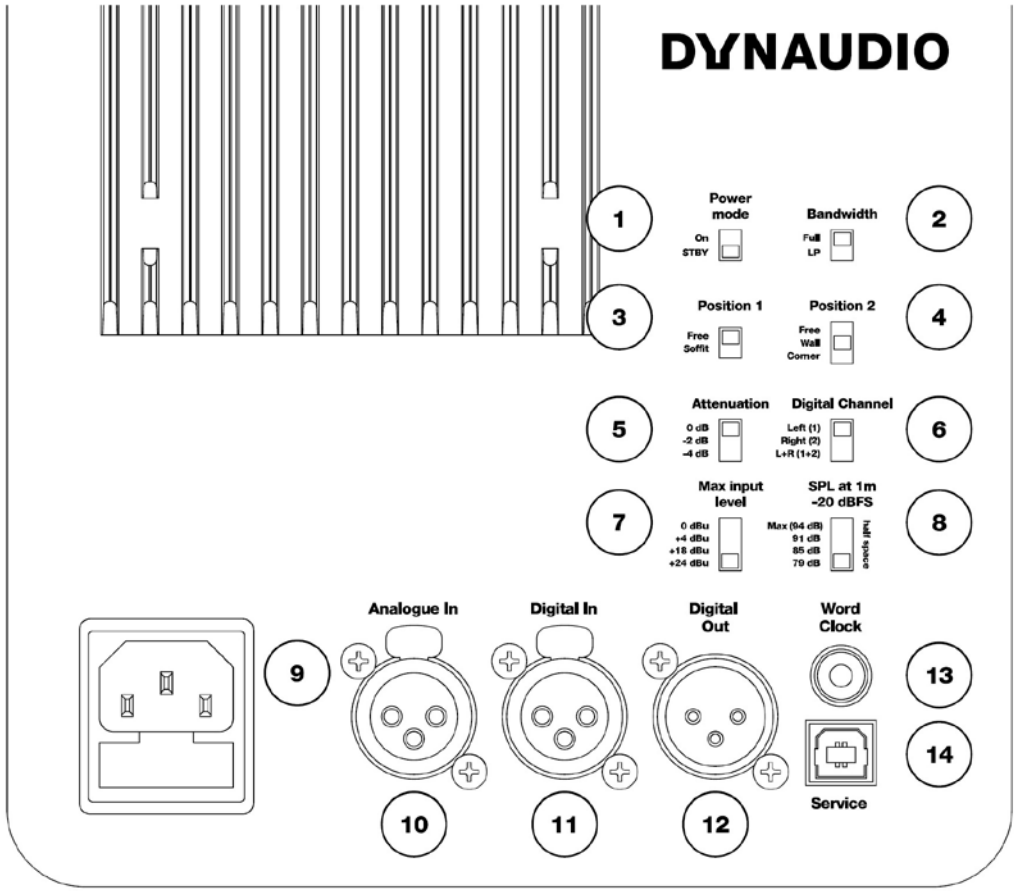
The transducers of your Dynaudio Core monitor will achieve a better sound quality after a break-in period.
Especially after the first hours of use, you may notice a significant increase in sound quality, and further subtle improvements in subsequent hours of use.

Amplifier
The Core monitor range features integrated Class-D amplifiers with analogue and digital inputs. All connections and settings are available on the back plate of the amplifier. Please do not remove the amplifier yourself. In case of service, contact your Dynaudio reseller.

Note
If you have either a **Core 7, Core 47, Core 59,** or **Core Sub** with version 1.0 firmware, please refer to that manual found here.
Otherwise, you can update the Core firmware to the latest version using the Firmware Update procedure found in this document.
Once you have updated the firmware on these models, the SPL settings will be different than the original labelling.
For the **Core Sub**, the "Attenuation" settings will also be different from their original labels.



1. **“Power mode”:** Power-saving auto-standby switch
2. **“Bass extension”:** sets a Linkwitz-Riley HPF at 80Hz
3. **“Digital channel”:** selects the left or right channel of the AES digital input signal
4. **“Sound balance”:** switches between three tilt filter settings
5. **“Position” switch 1:** position filters
6. **“Position” switch 2:** boundary filters
7. **“Max input level”:** sets the maximum input voltage. This switch is labelled “Analogue input sensitivity” on some models.
8. **“SPL at 1 m -20 dBFS”:** sets the SPL for -20 dBFS (-20 dBu from selected maximum input voltage or -20 dBFS from AES input). This switch is labelled “SPL level” on some models.
9. **AC power Input** (100-240 V)
10. **“Analogue in”:** Balanced analogue input (XLR)
11. **“Digital In”:** AES digital input (XLR)
12. **“Digital Out”:** AES digital output – pass through for second monitor (XLR)
13. **“Word Clock”:** Word Clock input (75 Ω BNC)
14. **“Service”:** USB Type B for firmware update or service



1. **“Power mode”:** Power-saving auto-standby switch
2. **“Bandwidth”:** sets a Linkwitz-Riley LPF at 80Hz
3. **“Position” switch 1:** position filters
4. **“Position” switch 2:** boundary filters
5. **“Attenuation”:** for use with two or four subwoofers
6. **“Digital channel”:** selects the left, right, or left + right channels of the AES digital input signal
7. **“Max input level”:** sets the maximum input voltage. This switch is labelled “Analogue input sensitivity” on some models.
8. **“SPL at 1 m -20 dBFS”:** sets the SPL for -20 dBFS (-20 dBu from selected maximum input voltage or -20 dBFS from AES input).
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14. **“Service”:** USB Type B for firmware update or service

Monitor orientation

The Core monitors give you the advantage of multiple orientations for each monitor, offering maximum flexibility for proper installation. Core monitors can be placed standing up or on their sides with either the woofers facing out or in. They can also be placed with the woofer on top in case that aligns the tweeter better with the listener's ear height or improves the bass response of the room.

Note that the **Core 47** has two models with the woofer placed on either side of the tweeter/midrange assembly. These monitors should be used in horizontal orientation only.

Core 59 and Dynaudio Orbit Baffle

The **Core 59** offers additional benefits, as it incorporates our *Orbit Baffle* (formerly "221") that was first used in the renowned Air series of monitors.
This technology places the tweeter and midrange driver together in their own self-contained baffle/enclosure that can be rotated inside the larger cabinet to provide additional orientation options.

For example, you may turn the midrange and tweeter assembly 90 degrees in either direction to place the monitor on its side and still have proper time alignment from the tweeter and midrange drivers. For a centre channel monitor, you can position the woofer either below or above the *Orbit Baffle* for the least obstructive path to the listener. There is no need for separate left, centre, and right channel models as each monitor is capable of operating in any position of a 5.1, 7.1, 9.1.2, or Dolby Atmos surround monitor system.

Rotating the Core 59's Orbit Baffle
See Appendix.

Connecting the monitors

Mains
Ensure that you have the correct three-wire grounding type mains cable for your region. The power supplies in the monitors have switching inputs that automatically adapts to the incoming voltage depending on your location.

Plug in the provided mains cable to the monitor and then to the outlet. Ensure the monitor powers up correctly by checking that the power LED is lit on the front of the monitor. Once this is confirmed, power off the monitor by removing the mains cable from the outlet before connecting audio signals.

Standby mode
The monitors have a standby mode that helps conserve energy when they are not in use.

- When the "Power mode" switch is set to "ON", the monitors remain powered on until the mains cable is unplugged.
- When the "Power mode" switch is set to "STBY", the monitors will automatically enter a power-saving standby mode when not in use for 20 minutes and shut down the amplifier section until audio is once again detected at the input.

Note
To comply with the European Commission Regulation (EU) No 801/2013 (low standby directive) the "Power mode" switch must always be set to "STBY".

Audio signals

There are two physical inputs you can choose between:

▶ XLR balanced or unbalanced

▶ XLR AES Digital

Word Clock Input

When using the AES digital input, you may synchronise the digital clock using a word clock signal. The Word Clock connector on the Core monitor should be used in this case to receive a word clock signal that is derived from the AES audio source. This will ensure that the internal clock of the Core monitor is running exactly in sync with the AES audio signal source.

If no word clock signal is present at the Core's Word Clock input, the Core monitor will use the embedded word clock from the AES signal itself as a synchronisation source. If the word clock signal is present, but not in sync with the AES clock, the front panel LED will flash bright green and the monitors will mute.

If you are using the **Core Sub** or **Core Sub Compact** to extend the frequency response of a single Core monitor, connect the same audio source to both the Core Sub and Core monitor either with the analogue or AES inputs. For the analogue inputs, you will need to use a professional balanced line splitter to feed both the Core Sub and Core monitor analogue inputs.

If using the digital inputs, you can simply daisy-chain the monitors using the digital out connector. Ensure that both the monitor and sub are set to the correct digital channel (L, R, or L + R).

Caution

Before sending audio to the monitors, set the Analogue input sensitivity to 24 dBu and the "SPL at 1 m -20 dBFS" switch to lowest setting. Then adjust the outputs of your mixer or audio interface to a low setting and gradually turn up the signal until you get a reasonable volume. This will prevent any accidental overload of the monitor input.

Adjusting the volume

The Core monitors have two inputs – analogue and digital. When using the analogue input, adjust the "Max input level" switch to optimize the gain staging between your analogue audio interface and the monitor. Then you can choose the maximum output level for a -20 dBu signal with the "SPL at 1 m -20 dBFS" switch. When using the digital input, the "Max input level" switch has no effect.

Note

The "SPL at 1 m -20 dBFS" switch setting affects acoustic output level of the monitor regardless of which input you utilise.

"Max input level" switch

This switch is labelled "Analogue input sensitivity" on some models.

There is a four-position switch that adjusts the analogue input sensitivity for the monitor. Depending on the maximum output level of your mixer, interface, or monitor control system, you can choose a setting that optimises the gain staging into the monitor.

For example, if you are using a professional audio interface or console with a max output of +24 dBu, set the input sensitivity to +24 dBu. If you are using a prosumer type mixer or interface with a maximum output of +18 dBu, then set the input sensitivity to +18 dBu. For consumer equipment such as DJ mixers that operate at a nominal level of -10 dBV, set the input sensitivity to 0 dBu.

0 dBu is the loudest setting while +24 dBu is the softest setting. The range is provided to optimise the signal to noise ratio between the monitoring output and the monitor.

SPL at 1 m -20 dBFS

The "SPL at 1 m -20 dBFS" setting determines the volume the monitors will achieve for an input level of -20 dBFS or -20 dBu from the selected "Max input level" setting as measured 1 meter from the monitor. If you work primarily at low levels, you can use a lower SPL setting to optimise the gain staging of the monitor to achieve the best results. If you work at louder levels, use the maximum SPL setting for the greatest volume that the monitor can provide.

When working in a calibrated environment such as Dolby Atmos, these settings are designed to provide a reference level at 1 meter distance with +20 dBu of headroom available. A typical setup would select the 85 dBSPL for all monitors at the same distance from the listening position.

Note
Notice that the max “SPL at 1 m -20 dBFS” setting is different for each Core model. However, all Core monitors and subs have the calibrated settings for 85 and 91 dBSPL so that large arrays of monitors can share a common reference.

SPL Settings for all models

- Core 5: 79, 85, 91, 96
- Core 7: 85, 91, 96, 101
- Core 47: 85, 91, 96, 105
- Core 59: 85, 91, 96, 105
- Core Sub: 85, 91, 96, 102
- Core Sub Compact: 79, 85, 91, 94

Some models may have different values listed. Update to the latest firmware version 1.1 to use these values.

Note
SPL settings for the Core Sub and Core Sub Compact are for half space as they typically are placed on the floor. You can also use the “SPL at 1 m -20 dBFS” setting in combination with the “Attenuation” setting to achieve more subwoofer sensitivity adjustments as needed for multiple subwoofers and/or room placement.

Front LED Indicator

There is one LED indicator on the front that provides information on the status of the Core monitor by glowing or flashing either green or red. The following modes are indicated in this way.

- Standby: The LED turns bright red then fades to 50% after 5 seconds.
- Power On: The LED turns bright green then fades to 50% after 5 seconds.
- Input Clipping: The LED flashes orange when the analogue to digital converter is clipping.
- Thermal Protection: The LED pulses red and the output is reduced by 6 dB.
- Word Clock Error: When the word clock input is not aligned with the AES input signal, the LED flashes bright green and the monitors are muted.

DSP Settings

Our engineers have created a DSP controller for these monitors that lets you tailor the sound to your particular environment.
The DSP settings provide precision adjustments that optimise the monitors for their position and mounting within the listening space.

“Bass extension” switch
The Core series monitors are designed to handle deep bass by themselves. And under normal conditions, the “Bass extension” switch should be set to “Full”. However, if you are integrating a **Core Sub** or **Core Sub Compact** to extend the bass response even further, set the “Bass extension” switch to “HP”. This will engage a 4th order Linkwitz-Riley high pass filter at 80 Hz with time alignment that properly integrates the monitor with the **Core Sub/ Core Sub Compact.**

“Bandwidth” switch (Core Sub or Core Sub Compact)
Use the “LP” setting when integrating a Core Sub or Core Sub Compact to extend the LF response of a Core Monitor.
This will engage a 4th order Linkwitz-Riley low pass filter at 80 Hz to integrate the Core Sub or Core Sub Compact with the Core monitor.

“Sound balance” switch
The sound balance, or tilt filter, represents a refined way to affect the overall tone of the monitor (not applicable for the Core Sub or Core Sub Compact). Depending on the room treatment and other factors, it may be necessary to make the monitor darker or brighter than the neutral setting. A dead sounding room with a great deal of treatment might need a brighter setting than a lively room with many reflective surfaces. Musical styles and program material may also affect the choice of sound balance as well as personal preference.

The “Sound Balance” switch offers three settings:

- ▶ “Bright”: 20 Hz -1.5 dB, 20 kHz +1.5 dB
- ▶ “Neutral”
- ▶ “Dark”: 20 Hz +1.5 dB, 20 kHz -1.5 dB

What this filter actually does is to tilt the entire spectrum by 1.5 dB at either end, using minimal phase filter to either brighten or darken the overall response. This minimal filter alters the tonality without inducing audible phase anomalies, thereby maximising the linearity of the monitor.

“Position” switch 1: “Anechoic” / “Desk” / “Soffit”

Depending upon where your Core monitors are positioned in your room, you can adjust the Core’s DSP to optimise for differing acoustics.

- ▶ The “Anechoic” setting is used when the monitors are placed on monitor stands in rooms that have sufficient dampening treatment such as recording studios and film dubbing stages.
- ▶ The “Desk” setting is used when the monitors are placed on a workstation or meter bridge of a mixing console (not applicable for **Core Sub** or **Core Sub Compact**).
- ▶ The “Soffit” setting is used when the monitors are mounted in properly designed wall soffits as part of an overall architectural acoustic design.

“Position” switch 2: “Free” / “Wall” / “Corner”

Boundary filters controlled with the second Position switch are used to compensate for monitors that are placed close to walls or in corners where low-frequency room modes can be triggered by the monitor. The Core’s DSP can adjust the response to compensate for either a wall or corner placement.

- ▶ If your monitors are placed further than 50 cm from any wall surface, use the “Free” setting.
- ▶ If you have positioned your monitors within 50 cm of a wall, “Position” switch 2 should be set to “Wall”.
- ▶ If the monitor is placed within 50 cm of a corner, set “Position” switch 2 to “Corner.”

These settings will help coping with anomalies created by reflections coming off the back and sidewalls, especially in the lower frequencies.

Updating the firmware

Core Update Tool

Periodically you may need to update the firmware in your Core monitors. This is done using the Core Update Tool and firmware download found here: Core Series downloads. The download packages include software for both macOS and Windows along with firmware files.

- ▶ Download and extract the ZIP file. Inside the folder you will find two applications, one for Mac and another for Windows along with the firmware files.
- ▶ Place the application in the appropriate location for your computer.

USB 2.0 connection

You will also need a USB 2.0 connection between your computer and the Core monitor in order to update the firmware. Each Core monitor has a female USB type B connector on the back panel.

Firmware update process

- ▶ To update the firmware, first ensure that the Core monitor is turned on.
- ▶ Connect your computer and the USB jack on the monitor’s back panel using a USB cable.
- ▶ Launch the Core Update Tool.

Caution

You may have to change your security preferences to allow the Core Update Tool to run on your computer.

1. Choose the “Firmware update” option, and you will see this window:

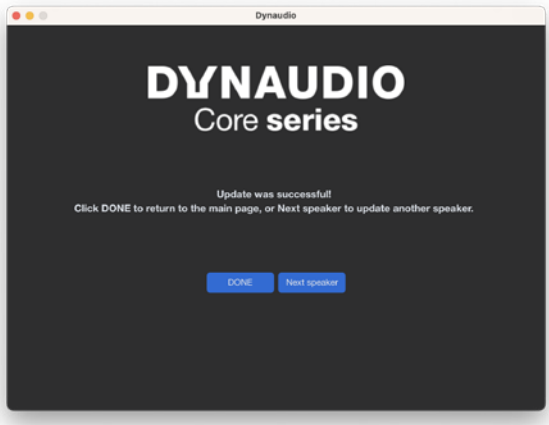
2. Choose the COM port that is connected to the Core monitor. As port names may be random and not obvious, try selecting each one until you see that a Core monitor is recognised. You will see the Core model displayed along with the current version number of firmware that is installed.

3. Next, browse to the location of the downloaded firmware files by clicking the ‘Browse’ or click the button to download the latest firmware.

4. Once you have a proper firmware file selected, click the Update button. A progress bar will appear showing the status of the upload. Once the upload has finished, you can either continue to update additional speakers or click DONE, disconnect the USB cable, and your Core monitor is ready to use.

Caution

To ensure proper operation, use the same firmware file in each speaker of your system. In the case that you are only updating one speaker, first check to see what firmware is installed on the other speakers in the system and load that firmware file when updating. It is recommended that you update all speakers and subs in your system to the latest firmware when possible.



6. The update is done.

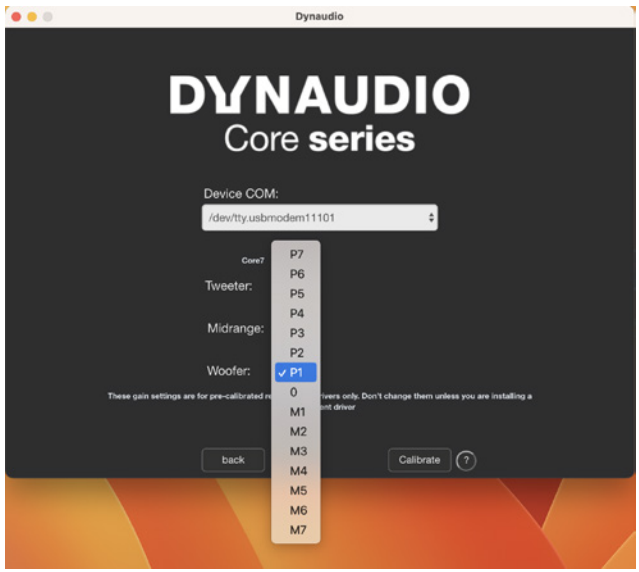
Replacing Drivers

Core Update Tool - Maintenance

Should you need to replace a driver in your Core speaker, it will be necessary to calibrate the speaker for optimal performance. Each Dynaudio driver is calibrated at the factory and marked with values on the driver assembly. Before installing the driver in the speaker cabinet, make note of this value.

In the photo above, the characters marked in red are the calibration value, in this case ‘P1’. Once you have this value noted, complete the driver installation and launch the Core Update Tool. Make sure the Core speaker is powered on and connected via the USB port. Click the ‘Maintenance’ button and select the appropriate COM port.

The Core model will be identified and the calibration will automatically update to the original values for each driver. Now enter the new value for just the replacement driver. In this example, the driver is being set to ‘P1’.

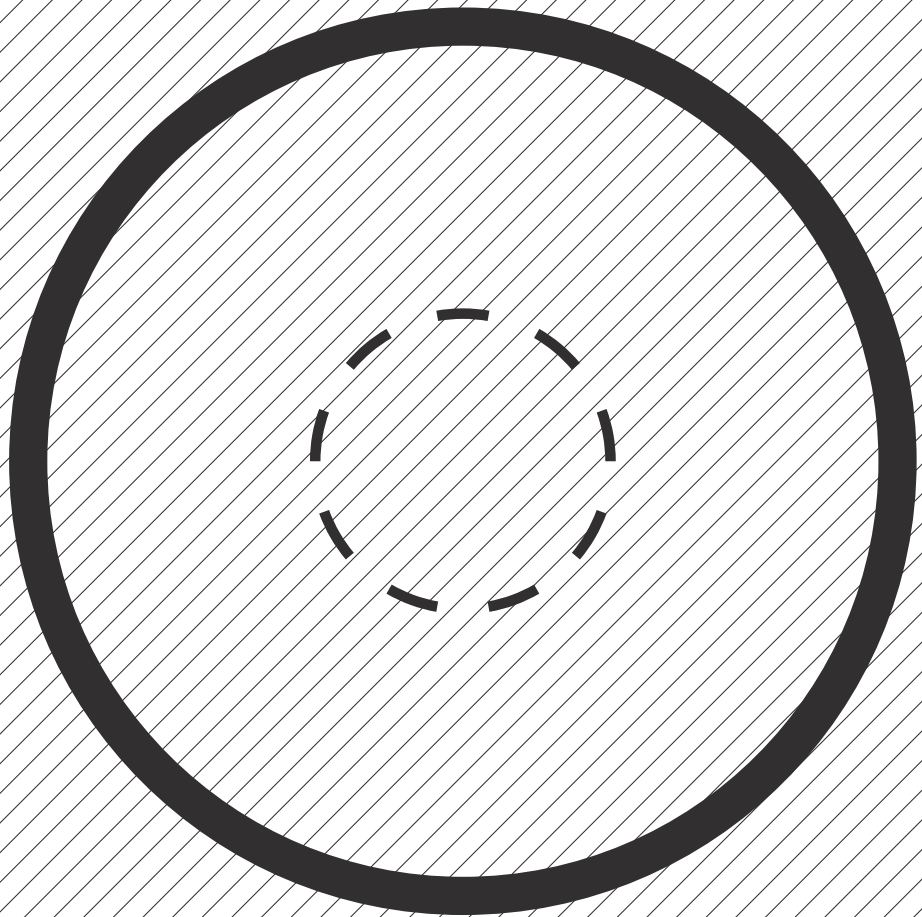


Once you have entered the value, press the ‘Calibrate’ button to upload it and your Core speaker is now ready to use.

For two-way speakers, Core 5 and Core 7, ignore the midrange setting.

For Core Sub, the ‘Midrange’ is for the bottom pair of drivers and the ‘Woofer’ is for the top pair of drivers. An average calibration level of both drivers in the pair should be used. (P1 = +1 and M1 = -1)

For the Core Sub Compact, the ‘Tweeter’ is for the left side driver and the ‘Woofer’ is for the right side driver as seen from the front.



DYNAUDIO

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