

SUB AX Reference Guide

Date: November 7, 2024
Rev.: 1.3

Advanced Subwoofers with Crossover Presets for RCF Speakers

This document applies to the following RCF products:

SUB 15-AX, fw 111

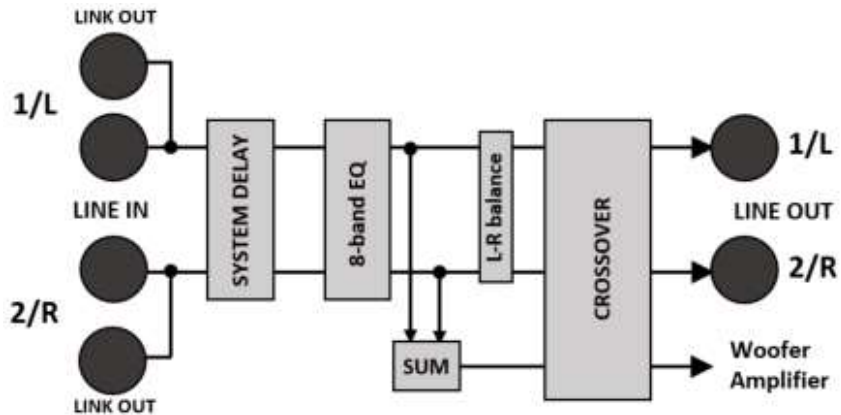
SUB 18-AX, fw 111



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1. QUICK START

The SUB AX series combines RCF well-known experience in high-performance subwoofers with an advanced digital engine, that adds ample flexibility and several functions to the product. Remote control via Bluetooth and a touch-based colour display allow full management of a system delay and an 8-band EQ, cardioid option, and a sophisticated digital crossover with fine-tuned presets for several RCF speaker products.

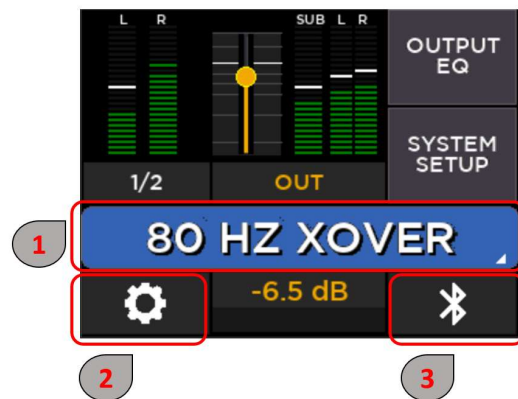


The encoder just below the touch screen is primarily dedicated to speaker level control; when navigating into the edit pages, when parameters are selected, the encoder allows to change parameter values.

The Home view is the default page that appears when turning on the unit; during edit, after a specified time interval of inactivity, the screen returns to the Mixer view.

On the SUB AX Home view, the only accessible parameter is overall output level, affecting both the subwoofer and crossover outputs.

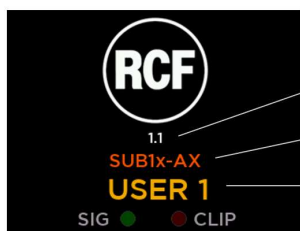
Touching button (2) brings you to the **SETTINGS** menu, while button (3) jumps to the **BLUETOOTH STATUS** page.



CROSSOVER PRESETS

An important feature of SUB-AX models is the availability of **CROSSOVER PRESETS** that cover the recommended combinations with RCF top speakers. A special DSP section is dedicated to the crossover and to its optimal phase response within the critical crossover frequency region. Each preset has been carefully tuned by RCF acoustical department for optimal audio performance.

Touching the blue area (1) allows the selection of a **CROSSOVER PRESET** to handle the combination of the subwoofer with specified RCF speakers.



- Configuration: 1.1 or 2.1
- BT Name
- Currently selected Crossover Preset

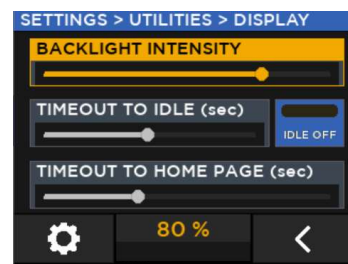
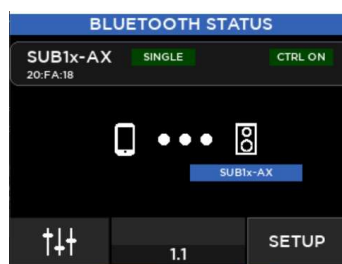
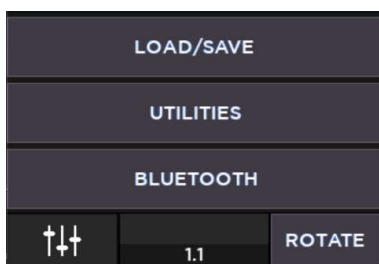
After some time with no screen activity, the touch screen goes in *idle mode*, where the screen shows two indicators (signal presence, clip), the RCF logo or the speaker volume when modified. A click on the encoder resumes from screen idle mode, showing the Home view again.

In idle, the rotary control is active and affects overall output level.

The **SETTINGS** view allows a full configuration of the unit; this is explained in detail in the following chapters

The **BLUETOOTH STATUS** page allows a quick check of current status and allows pairing with a smartphone running the LiveRemote app (for iOS and Android)

Note: go to SETTINGS > UTILITIES > DISPLAY to modify Timeout to Idle and Time to Home Page values, both in seconds



2. PAGES OVERVIEW

Touch Screen Gestures

On the following pages, top-to-bottom gesture is enabled to allow a faster navigation:

- Output EQ view
- SETTINGS page
- Cardiod page

Swiping from top to bottom jumps to the HOME page.



HOME

HOME View is the default page which shows up when the SUB AX is powered on or exits from the idle state.



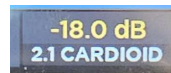
Five actions are available from the Home view:

- Change overall output level (via encoder; it affects the cursor in the centre)
- Go to PRESETS page (blue button below VU Meters)
- Go to OUTPUT EQ page (upper right button)
- Go to SYSTEM SETUP page (centre right button)
- Go to SETTINGS page (lower left button)
- Go to BLUETOOTH STATUS page (lower right button)

If the output level is set to minimum, the fader turns red to highlight its status

The center lower section of this page contains several details:

- Current edit value (top, yellow)
- 2.1 indication (1.1 is the default and is not shown)
- If CARDIOD is enabled, it is shown on the same row.



If L and R turn red, it means they are muted; this happens when CARDIOD is enabled

OUTPUT EQ

A stereo EQ section is available that affects both the subwoofer and the two crossover outputs; it can be accessed from Home view by pressing the OUTPUT EQ button.

The EQ (on/off) switch enables the whole EQ section.

The EQ RESET button resets all EQ parameter values to their default, with gain = 0 dB.

A total of 8 bands are available:

- Band [1]: LO SHELF
- Bands [2] – [7]: PEAK
- Band [8]: HI SHELF

The NEXT button jumps to the next available band, exposing its controls, and cycling as follows:

[1] → [2] → → [7] → [8] → [1] →



Parameters ranges are:

Parameter	MIN	MAX
GAIN	-12 dB	+12 dB
Q	1.00	20.00
FREQ	21 Hz	20 kHz

If you turn the FREQ parameter all anti-clockwise, the first allowed value is **OFF**, effectively bypassing the specific band.

PRESETS

A stereo EQ section is available that affects both the subwoofer and the crossover outputs; it can be accessed from Home view by touching the blue bar.



Navigating the preset selection page:

- Touch the category area, then rotate the encoder or swipe in the category area to scroll through the options; touch a category, it will be highlighted in orange
- Touch the preset area, then rotate the encoder or swipe in the category area to scroll through the options; touch a category, it will be highlighted in orange

After loading, a popup will appear to indicate the settings on the TOP speaker that were used to fine tune the preset itself.



The system approach is different from the ART 9-AX family: with SUB AX products, audio inputs are fed to the SUB unit, and the crossover output(s) are fed to the top cabinet(s).

Two configurations are possible: MONO [1.1] or DUAL MONO (or STEREO) [2.1].

MONO (1.1)

STEREO (2.1)



Category	Product / Location	Count	User Editable	Notes
USER	XOVER BYPASS	1	NO	When selecting the XOVER BYPASS special location: - subwoofer lowpass filter is set to 400 Hz - XOVER outputs are set to full-range
USER	USER 1 – USER 4	4	YES	USER locations can be edited. The EDIT button appears after loading the location; after editing, a (*) appears at the end of location name
APP	FROM APP 1 – FROM APP 4	4	NO	FROM APP locations can be uploaded from the LiveRemote app. This allows you to load the latest presets without the need to perform a firmware update. The locations cannot be edited.
STD	60/80/100 Hz XOVER	2 or 3	NO	STANDARD crossover settings, to immediate results with a generic top speaker; on SUB 15-AX, only 80 and 100 Hz are available.
RCF READ-ONLY	Various RCF products	Depends on SUB AX model	NO	The presets have been individually fine-tuned by RCF acousticians, are phase accurate and cannot be edited. Available presets vary for each SUB model. Please refer to Appendix A for a complete list.

Each preset includes the normal configuration, both in 1.1 and 2.1 modes, and the cardioid configuration.

SYSTEM SETUP

The System Setup page changes slightly depending on the selected configuration, either 1.1 or 2.1. This can be modified with the **(SYSTEM) 2.1** switch on the top left: OFF → 1.1, ON → 2.1.

The **(SYSTEM) DELAY** is a global delay that affects both the subwoofer and the crossover outputs; its range is

0 ms	136 ms
0 meters	46.6 meters
0 feet	153.04 feet

The **SUB LEVEL** is a level trim to force a higher or lower subwoofer level, and offers a [-12.00 +12 dB] range. It is independent from the level included in each crossover preset.

The **TOP/SUB DISTANCE** allows for an adjustment of the relative distance between top speaker and subwoofer; the 0 meters value refers to the top speaker inserted on a pole mounted on the subwoofer; values higher than zero refer to the subwoofer being moved nearer the listener with respect to the top speaker. Allowed range is:

0 ms	30.0 ms
0 meters	10.29 meters
0 feet	33.76 feet

1.1 configuration



2.1 configuration

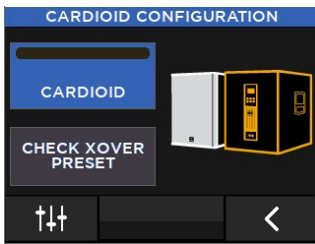


When 2.1 configuration is selected:

- a further parameter becomes visible: LR BALANCE, which acts like a stereo balance on the crossover outputs, and allows to alter the relative level between L and R outputs. It does not affect subwoofer level
- the 2.1 indication appears on the lower part of the screen, which is also visible on the HOME page

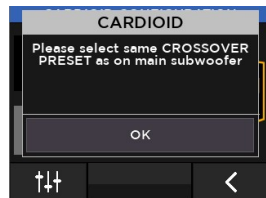
For each delay parameter (SYSTEM DELAY, TOP/SUB DISTANCE, ALIGN DELAY inside the USER crossover edit page) it is possible to cycle between **ms / feet / meters** representation when the parameter is selected, by clicking on the encoder with a medium press time (more than 500 ms).

The **CARDIOD** button links to a dedicated page:



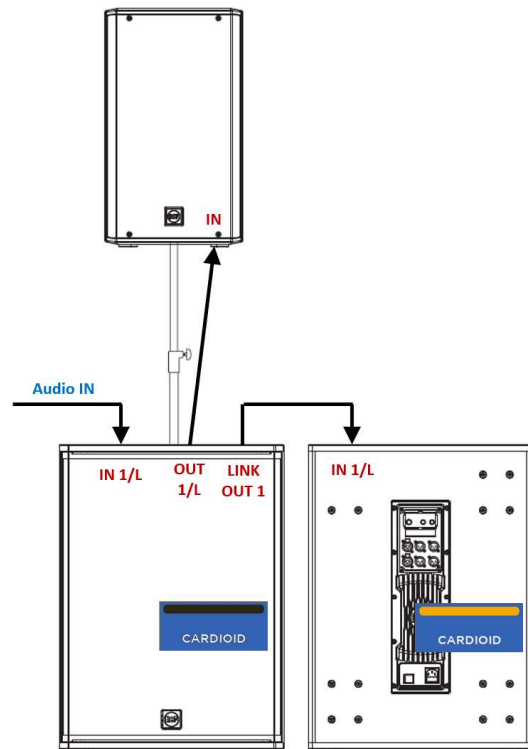
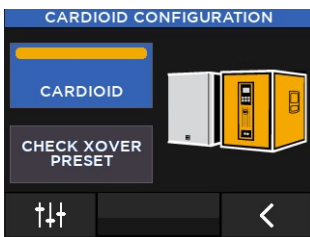
The **CHECK XOVER PRESET** button jumps to the PRESET SELECTION page.

When **CARDIOD** mode is enabled, the unit gives a warning to make sure the preset is matching the one on the main unit:



With **CARDIOD** is enabled:

- on the HOME page, the CARDIOD indication appears on the lower part of the screen, after the 2.1 indication if needed
- L and R outputs are MUTED



SUGGESTED WIRING CONNECTIONS FOR A 1.1 CARDIOD SETUP

Please notice that the CARDIOD page is available only when a read-only preset has been previously selected; if a USER preset is selected, the preset CARDIOD option is disabled. A cardioid configuration can be realized anyway, working with USER crossover parameters, where values are strongly dependent on cabinet type and crossover frequency; we suggest to perform a measurement session for optimal results.

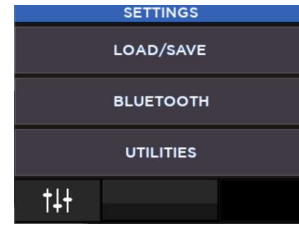
3. SETTINGS

From the HOME view, pressing the EDIT button (lower left) leads to the SETTINGS page, with three pages that can be selected.

The **LOAD/SAVE** page allows global save and recall of all parameters.

The **BLUETOOTH** page shows current connection status and configuration options.

The **UTILITIES** page covers several functions.



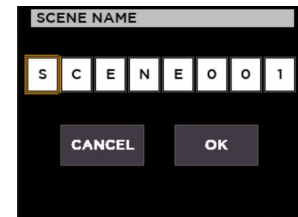
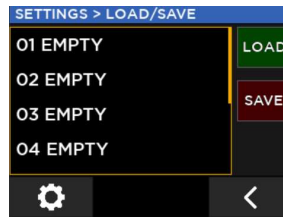
LOAD/SAVE

The **LOAD/SAVE** page allows saving and recalling the full configuration of the unit, with the exception of Bluetooth parameters.

A total of 8 memory locations (scenes) can be saved.

Select the desired scene, then press **SAVE**; you can modify its default name by rotating the encoder to select a character, pushing the encoder to confirm the character itself and jump to next available position. If you press **OK**, name editing is completed. The first available character is an END-OF-LINE special symbol (grayed out) that indicates the name end, ignoring the following characters; the second available character is the usual **SPACE** character.

To recall a scene, select it from the list and press **LOAD**.



UTILITIES

The button on the lower left corner of the HOME page jumps to the **UTILITIES** page, where several auxiliary functions are available.



The **INFO** page displays model and firmware version of the unit, plus low-level details of the Bluetooth control interface.

Please note that Bluetooth audio is not available on this product, as the Bluetooth connection is intended for remote control only.



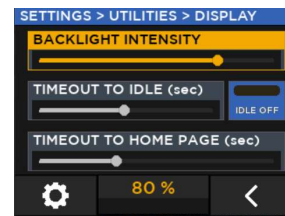
The **DISPLAY** page offers several display management options:

BACKLIGHT INTENSITY: from 10% (minimum) to 100% (maximum).

TIMEOUT TO IDLE: leftmost value is OFF (it never goes to idle), range is 1-120 seconds; default is 60 seconds.

IDLE OFF: when ON, only SIG and CLIP indicators are shown when in IDLE (see below).

TIMEOUT TO HOME PAGE: leftmost value is OFF (it never goes back to HOME page), range is 1-120 seconds; default is 40 seconds.



IDLE OFF

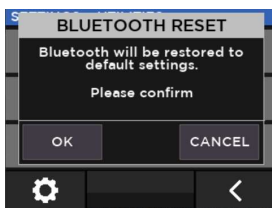


IDLE ON

BLUETOOTH RESET

The Bluetooth interface will be restored to its default values; all memorized devices will be removed.

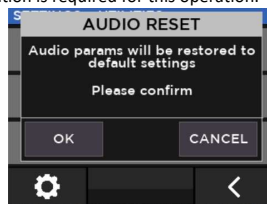
A confirmation is required for this operation.



AUDIO RESET

All audio parameters will be restored to their default values; Bluetooth and display parameters, scenes, user presets and from-app presets will not be modified.

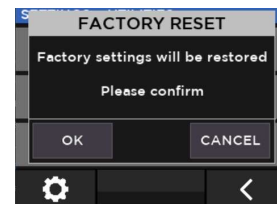
A confirmation is required for this operation.



FACTORY RESET

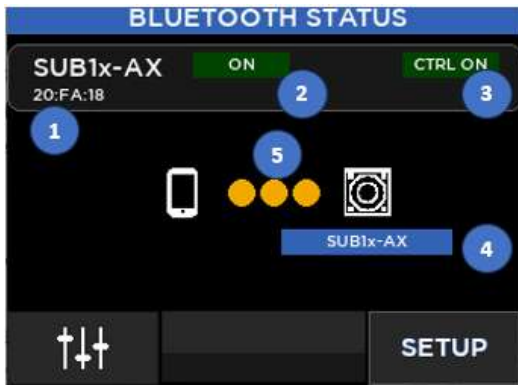
A global factory restore will be performed, erasing all user-related content (scenes, user presets, from-app presets, Bluetooth settings, display parameters).

A confirmation is required for this operation.



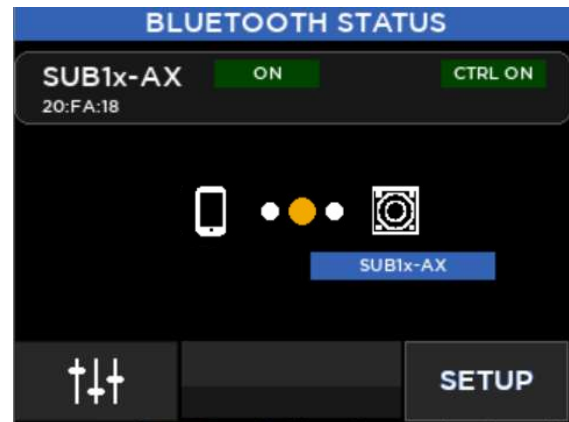
BLUETOOTH

The Bluetooth STATUS page can be reached directly from the Home Page, by touching the button on the lower right. Lots of information is visible on this page:



- (1) Last 6 digits of Bluetooth UUID number, for internal use only
- (2) Shows if the Bluetooth section has been turned ON (see SETTINGS page)
- (3) indicates if an external Bluetooth controller is connected successfully
- (4) Bluetooth name (it can be changed)

- (5) Bluetooth connection status; if not connected to any device, the symbol changes to a “walking” yellow dot to indicate that the unit is waiting for a connection:



The SETUP buttons jumps to the SETTINGS > BLUETOOTH page, which can be reached also from the Home page.

The BLUETOOTH SETTINGS page allows several operations related to remote control:

ON / OFF: you can enable /disable the Bluetooth radio interface.

CLEAR LIST: all memorized devices will be removed, and the currently connected control device will be disconnected.

STATUS: it shows the status of the currently connection, similar to the STAUS page described above.

In addition, by tapping once on the current name, the BT Name Edit page opens:



Then select each character using the encoder and the confirm the choice with an encoder push, which also jumps to next available position. If you press OK, name editing is completed.

The first available character is an END-OF-LINE special symbol (grayed out) that indicates the name end, ignoring the following characters: the second available character is the usual space character.



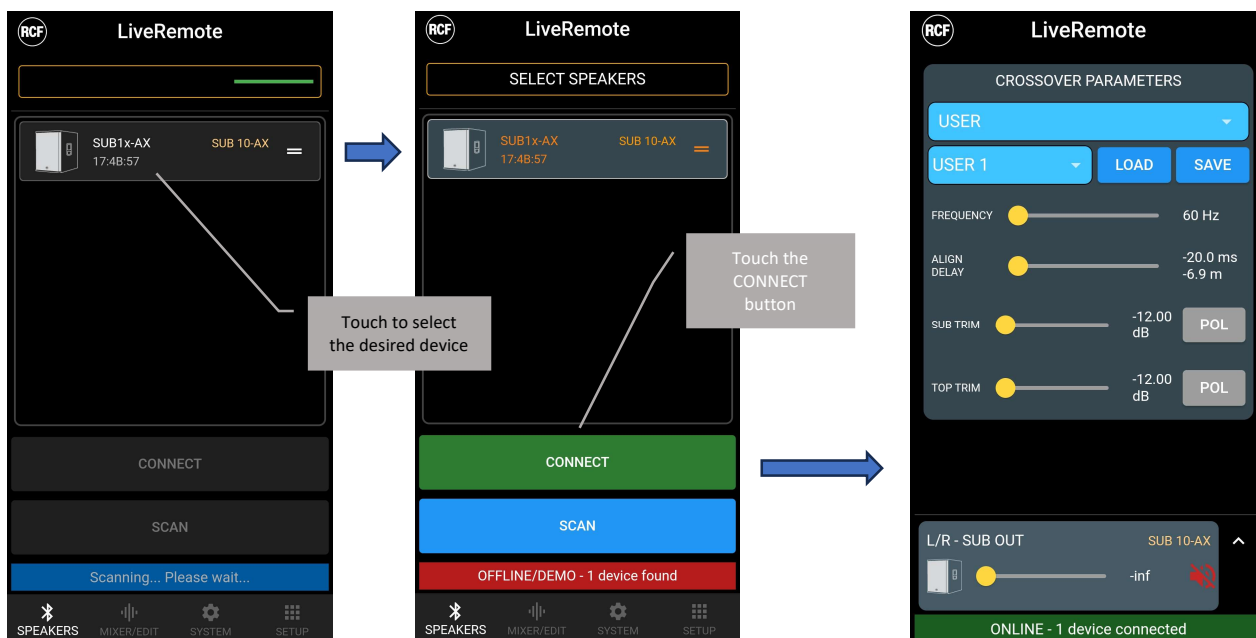
By pressing on CLEAR LIST, all memorized and paired devices will be cancelled.



The SUB AX subwoofer offers a Bluetooth connection for remote control only. To connect to a speaker, please launch the **LiveRemote** app on your smartphone, then go to the **SPEAKERS** lower tab; launch a **SCAN** to discover devices and select the one you wish to connect to; usually the app starts already in **SCAN** mode.

This page helps you to select the appropriate device in case there is more than one unit within reach. We suggest modifying the default Bluetooth names to differentiate between units.

The connection sequence is straightforward:



Troubleshooting the Bluetooth connection

If for some reason the LiveRemote app is not connecting to the speaker, there may be three possible actions to follow:

- 1) Device Scan list on the LiveRemote app is showing an outdated list: please press **SCAN** again to verify device presence
- 2) The speaker is already connected to another smartphone: please double check
- 3) If the connection fails, there is the possibility to clear all connections, both saved and current, by clicking on **CLEAR LIST**. After performing a **CLEAR LIST**, redo the **SCAN** on LiveRemote and connect to the desired unit. **CLEAR LIST** is available in all Bluetooth modes.

Appendix A – Preset List

The current 111 firmware includes the following individually fine-tuned crossover presets:

	SUB 15-AX	SUB 18-AX
ART 9 SERIES SPEAKERS		
ART 910-A	●	●
ART 912-A	●	●
ART 915-A		●
ART 932-A	●	●
ART 935-A		●
ART 945-A		●
ART 7 SERIES SPEAKERS		
ART 708-A MK5	●	●
ART 710-A MK5	●	●
ART 712-A MK5	●	●
ART 715-A MK5		●
ART 732-A MK5	●	●
ART 735-A MK5		●
ART 745-A MK5		●
NX SERIES SPEAKERS		
NX 910-A	●	●
NX 912-A	●	●
NX 915-A		●
NX 932-A	●	●
NX 945-A		●
NXL SERIES SPEAKERS		
NXL 14-A	●	●
NXL 24-A MK2	●	●
NXL 44-A MK2		●
NXW 44-A MK2		●
HD SERIES SPEAKERS		
HD 10-A MK5	●	
HD 12-A MK5	●	●
HD 15-A		●
HD 35-A		●

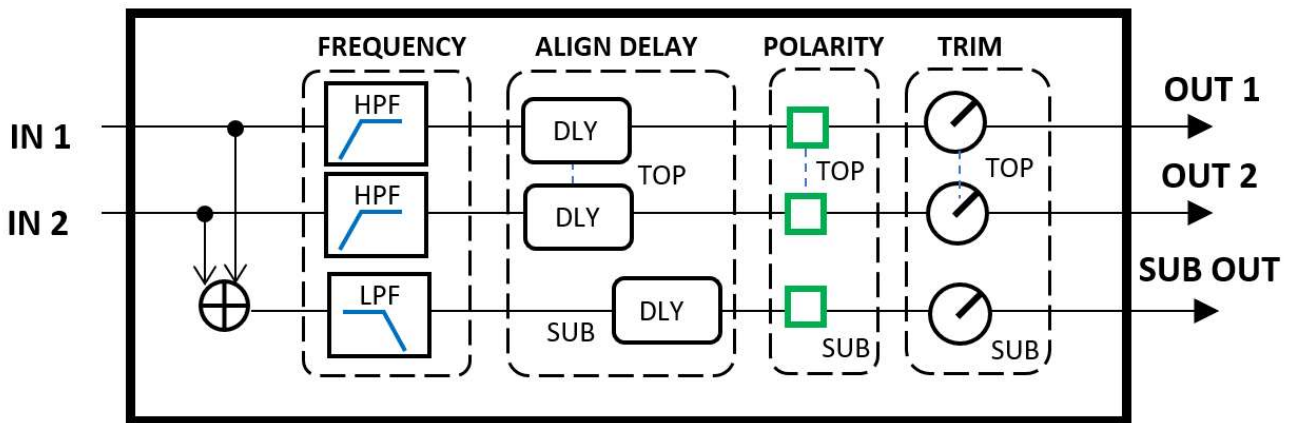
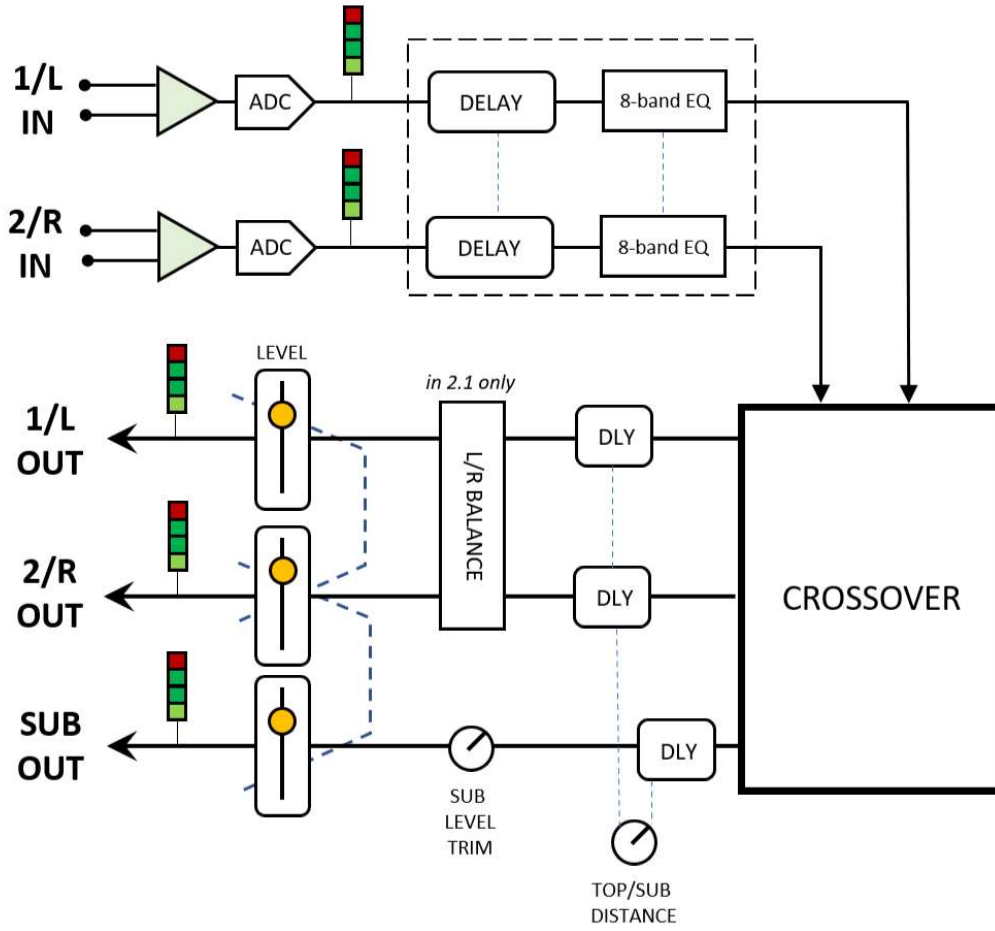
Please note that cabinets with 15" internal woofer do not have a preset on the SUB 15-AX.

We do not offer all possible combinations, but rather the ones that are recommended by RCF.

The preset list will be expanded when relevant new products will be introduced by RCF.

The LiveRemote app, in its latest version, includes all the most recent presets, and it is possible to upload on the SUB AX specific presets without requiring a complete firmware update.

Appendix B – Block Diagram



USER CROSSOVER PRESETS

Revisions Summary

Revision	Date	Notes
1.08	July 2024	- Initial Release
110	September 2024	- STD presets added - CARDIOD option not available with a USER preset - Minor bug fixes
111	November 2024	- NXL 14-A preset added - Enhancement of crossover output performance - Minor bug fixes