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User's manual

X218WFD

XCELLENCE

December 2022

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Safety Instructions

1. All safety instructions must be read before using this device.
2. The exclamation mark in the triangle indicates internal components which if replaced can affect safety.
3. The lightning symbol within the triangle indicates the presence of dangerous uninsulated voltages.
4. This device must not be exposed to rain or humidity. It must not be used for example near swimming pools, fountains or any other place where it might be affected by liquids.
5. Only clean the device with a dry cloth.
6. Do not situate the equipment where its ventilation system might be interfered with.
7. Do not install the device near heat sources such as radiators, heaters or other heat-emitting elements.
8. The equipment must be repaired by qualified technical service personnel when:
 - A. The mains supply cable is damaged, or
 - B. Any object or liquid has damaged the device; or
 - C. The equipment does not function normally or correctly; or
 - D. The equipment has been exposed to the rain; or
 - E. The chassis is damaged
9. Disconnect the device in the case of electric storms or during long periods of disuse.
10. Never hang the equipment by its handle.
11. Only use manufacturer recommended accessories.

1 INTRODUCTION

1.1 General product information

Amate Audio thanks you for the trust placed in our Xcellence loudspeaker systems. The Xcellence series combines the convenience of a self-powered system and the flexibility of the DSP (digital system processing) for cabinet control. More than 45 years' experience in amplifier and acoustic cabinet design using the highest technology and components come together to give you a product ideal for a multitude of applications, especially those which require high levels of sound pressure and a control of vertical coverage. Stadiums, theatres or big events will become the perfect places for their use. We suggest you read the following information with attention, assured that it will be of maximum use in helping you to achieve the best results and optimum performance.

1.2 Subwoofer arrays

A subwoofer array consists in a set of two or more subwoofers with the same target as a Line-Array: Achieve a great Sound Pressure Level (SPL) with a maximum coverage preventing irregular SPL distribution.

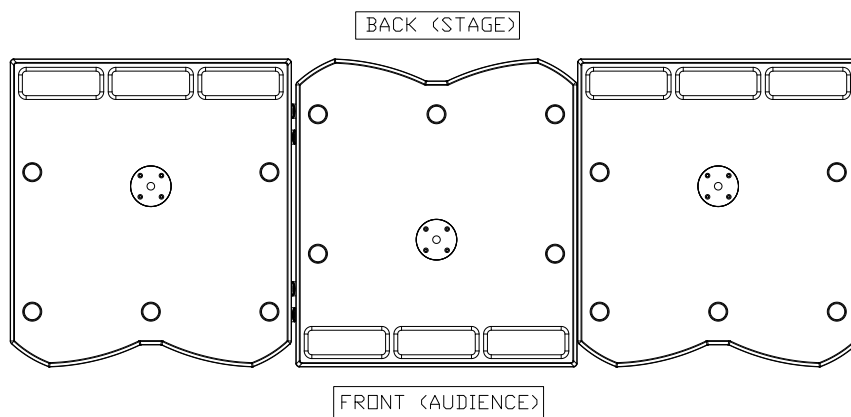


Fig.1. X218WFD cardioid subwoofer array

The emplacement of the subwoofers is critical in applications where we have two or more of them. Low frequencies wavelength are longer so the chance of them to interact negatively increases. In this scenario the performance of our subwoofer array would be heavily downgraded.

For example for a sound wave of 100 Hz the wavelength is:

$$\lambda = \frac{c}{f} = \frac{340}{100} = 3.4 \text{ meters}$$

If we place two subwoofers at less of 1.7 meters (Half of λ) the sound waves of 100 Hz corresponding of two different subwoofers will enter in the same period $T/2$ with a nearly equal SPL. In this scenario, for this specific frequency, both of them will work as one same subwoofer with increased performance.

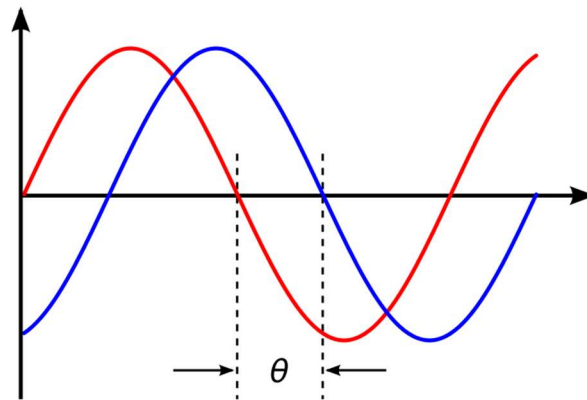


Fig.2. Phase difference θ between soundwaves of different sources

We can illustrate this phenomenon looking at the **Figure 2**. The strokes represent different subwoofers in different colors. Vertical y axis is the displacement of sound pressure and x axis is the time when the sound waves reach a specific spatial point. Phase difference is the Greek letter theta θ . When the phase difference is low the peak pressure of the two strokes match. This causes a positive addition. When the phase difference is $T/4$ the valley of blue stroke matches the peak of red stroke. This causes negative addition and a theoretical absence of sound.

The closer the distance between subwoofers, the more chances we can get a positive addition. The more sensible frequencies of the emplacement of the subwoofers are those closer to the crossover frequency. That is why we advise against emplacing the subwoofers beneath the line-array towers in the typical L-R sound system. More information is available in our Recommended Configurations guide.

With a good sound design we can take profit of the previous phenomenon for creating a subwoofer array which increase the performance of our sound system. Also for preventing the soundwaves to be emitted in certain areas of interest (E.g. The Stage). Knowing the sound speed, we can work in both the time and spatial plane, emplacing the subwoofers in reverse direction to invert the phase in order to create a *cardioid* subwoofer array. In section 3.4 we talk further about the cardioid configurations.

All this process of subwoofer array sound design could be very time consuming. In Amate Audio we worked this out to offer an accessible presets, factory available inside our Xcellence X218WFD. In addition we created a document with different physical configurations so the user can select the one which fits in the application. You can find our Recommended Configurations Guide in our website, in the Downloads section for X218WFD.

1.3 Features and presentation

X218WFD

- Self-powered subwoofer
- XLR electronically balanced input & XLR parallel link
- AC PowerCon input & link
- EtherCon RJ45 input & link
- 1 Gbps Ethernet connectivity with Dante™ audio networking.
- 5000W class D amplifier
- 24-bit AD/DA converters with 112 dB dynamic range, 48 kHz sampling rate
- DSP Controls (presets, parametric EQs, delay, mute, volume and limiter)
- Amplifier self-diagnostics: input level, temperature, limiter active
- Overvoltage protection (>250V-400V)
- 2 x 18" long-excursion neodymium woofers with 4" voice coil and demodulation rings to reduce distortion and the transitory response.

2 X218WFD FEATURES

The X218WFD cabinet is ideal for bass reinforcement. It includes 5000W amplification for the woofer and digital signal control by DSP. The manufacturer presets make it easy, flexible and user-friendly.

2.1 Technical description

The X218WFD cabinet comes with DSP control, direct radiation transducers and acoustic bass reflex cabinet. As a subwoofer system, its usable bandwidth is 25Hz-120Hz (-10 dB). It has 5000W continuous amplification (2500W + 2500W), thermal protection, output short circuit protection, independent peak and RMS power limiters for each channel, and protection against overvoltage. The DSP includes several presets which can be selected either accessing the cabinet's rear control screen or via the computer with Ethernet connection.

The X218WFD cabinet is connected using the XLR balanced connector or via Dante™ audio networking, using the RJ45 connectors. Mains supply is through PowerCon. It is built in birch plywood, which has a high resistance to vibrations and humidity with black Polyurea paint coating. The front face is protected by two 2 mm thick steel grilles with acoustically transparent grey cloth. It includes two in-built lateral handles and one back handle for an easy and comfortable transport.

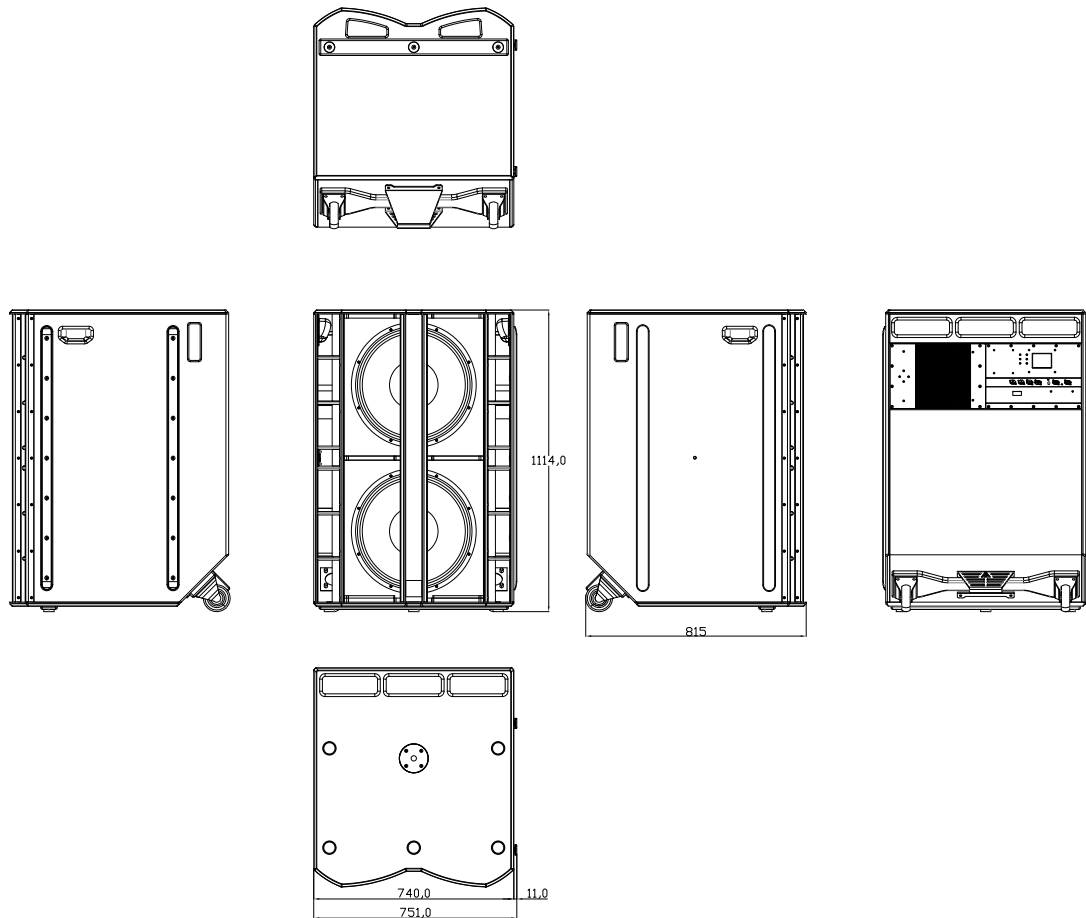


Fig.3. X218WFD external dimensions

3 PRESETS

The X218WFD includes several manufacturer presets for different types of application. The DSP system can also store up to 25 other presets, depending on user requirements

3.1 As extension on floor for X212AFD

The X218WFD provides an extension of the bandwidth in the low end for the Xcellence Line Array system X212AFD, down to 25 Hz. The overall system operates over the nominal bandwidth 25 Hz – 18 kHz, -10dB.

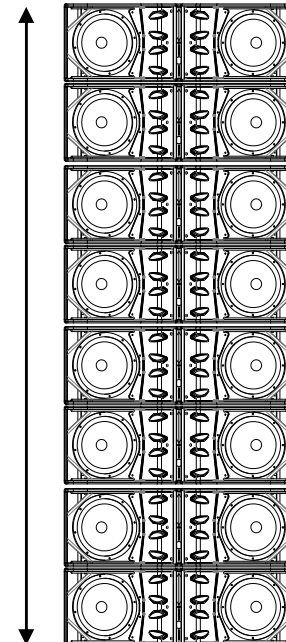
This extension can be done at two different crossover points: 60Hz or 80Hz. Please note that depending on the crossover point used in the subwoofer, the corresponding preset must be selected in X212AFD.

3.1.1 X212AFD as a line source with X218WFD extension on floor and upper frequency limit of the subwoofer at 60 Hz.

The X218WFD provides an extension of the bandwidth in the low end, down to 25 Hz. The system operates over the nominal bandwidth 25 Hz – 18 kHz, -10dB.

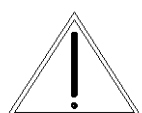
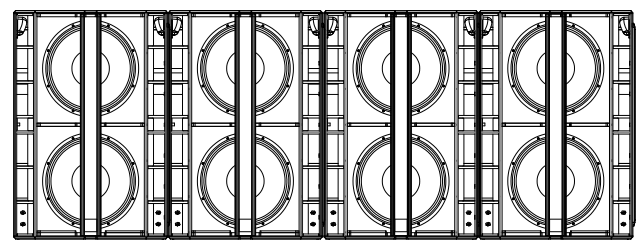
Model: X212AFD
Preset: [HPF60 FLAT]

[HPF60 FLAT]

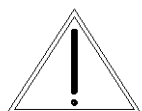


Model: X218WFD
Preset: [LPF60 X212]

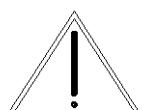
[LPF60 X212]



The minimum number of cabinets to be used as a line source system is 6 cabinets. We do not recommended to use less than 6 cabinets per side. The optimum number of cabinets per side would be from 8-9 cabinets to up.



Place the subwoofers side by side. If not possible, the maximum distance between two adjacent acoustic centres must be 2.8m when the upper frequency limit of the subwoofer is at 60 Hz.



SYSTEM ALIGNMENT

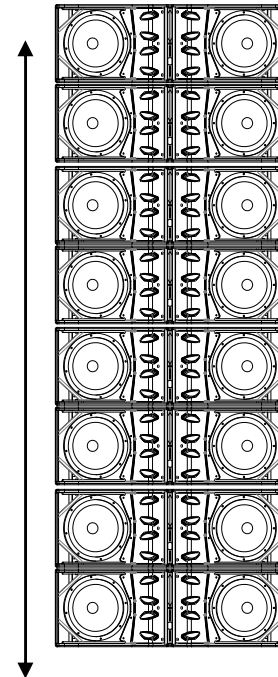
The system is pre-aligned from the factory. Do not forget to add the geometric delay depending on the configuration used.

3.1.2 X212AFD as a line source with X218WFD extension on floor and upper frequency limit of the subwoofer at 80 Hz.

The X218WFD provides an extension of the bandwidth in the low end, down to 25 Hz. The system operates over the nominal bandwidth 25 Hz – 18 kHz, -10dB.

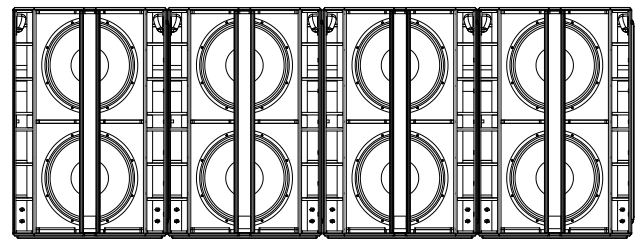
Model: X212AF/D
Preset: [HPF80 FLAT]

[HPF80 FLAT]

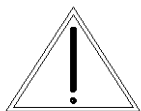


Model: X218WFD
Preset: [LPF80 X212]

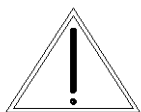
[LPF80 X212]



The minimum number of cabinets to be used as a line source system is 6 cabinets. We do not recommended to use less than 6 cabinets per side. The optimum number of cabinets per side would be from 8-9 cabinets to up.



Place the subwoofers side by side. If not possible, the maximum distance between two adjacent acoustic centres must be 2.1m when the upper frequency limit of the subwoofer is at 80 Hz.

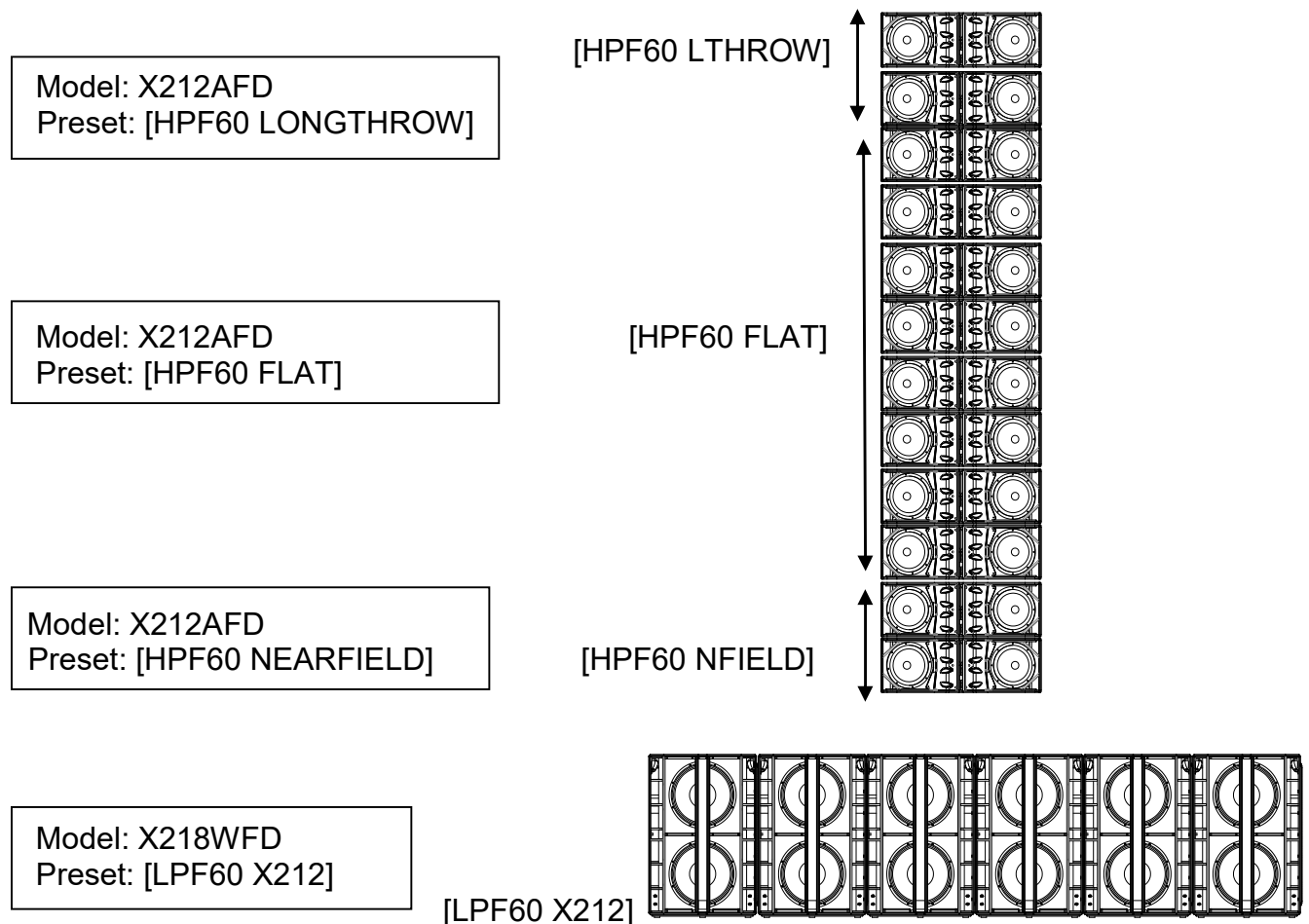


SYSTEM ALIGNMENT

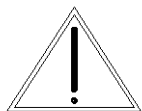
The system is pre-aligned from the factory. Do not forget to add the geometric delay depending on the configuration used.

3.1.3 X212AFD as a line source (including NearField and Longthrow cabinets) with X218WFD extension on floor and upper frequency limit of the subwoofer at 60 Hz.

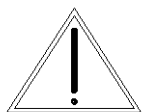
The X218WFD provides an extension of the bandwidth in the low end, down to 25 Hz. The system operates over the nominal bandwidth 25 Hz – 18 kHz, -10dB.



The minimum number of cabinets to be used as a line source system is 6 cabinets. We do not recommended to use less than 6 cabinets per side. The optimum number of cabinets per side would be from 8-9 cabinets to up.



Place the subwoofers side by side. If not possible, the maximum distance between two adjacent acoustic centres must be 2.8m when the upper frequency limit of the subwoofer is at 60 Hz.

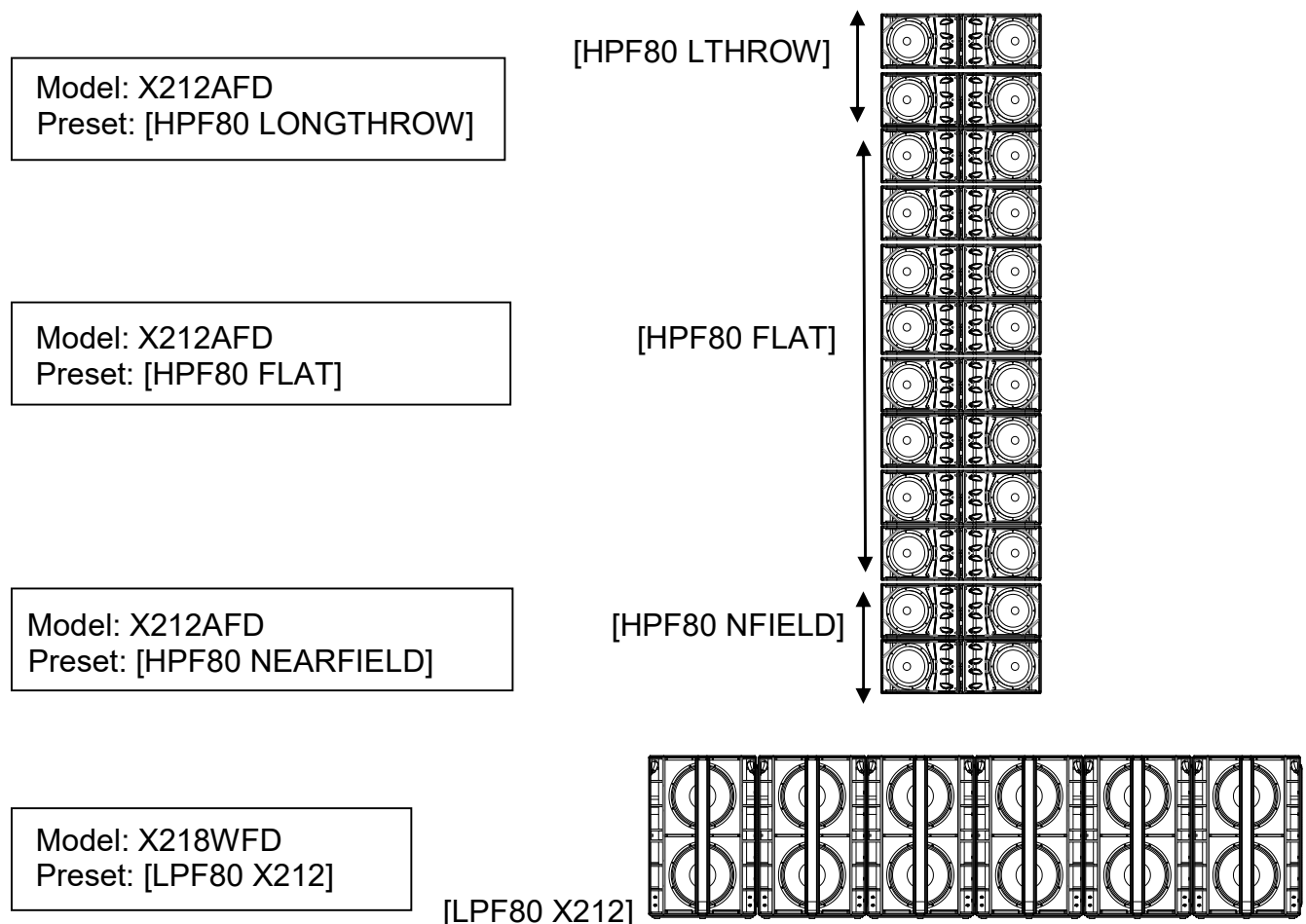


SYSTEM ALIGNMENT

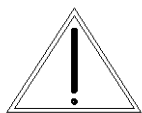
The system is pre-aligned from the factory. Do not forget to add the geometric delay depending on the configuration used.

3.1.4 X212AFD as a line source (including NearField and Longthrow cabinets) with X218WFD extension on floor and upper frequency limit of the subwoofer at 80 Hz.

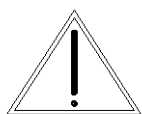
The X218WFD provides an extension of the bandwidth in the low end, down to 25 Hz. The system operates over the nominal bandwidth 25 Hz – 18 kHz, -10dB.



The minimum number of cabinets to be used as a line source system is 6 cabinets. We do not recommended to use less than 6 cabinets per side. The optimum number of cabinets per side would be from 8-9 cabinets to up.



Place the subwoofers side by side. If not possible, the maximum distance between two adjacent acoustic centres must be 2.1m when the upper frequency limit of the subwoofer is at 80 Hz.



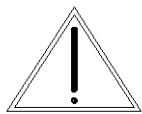
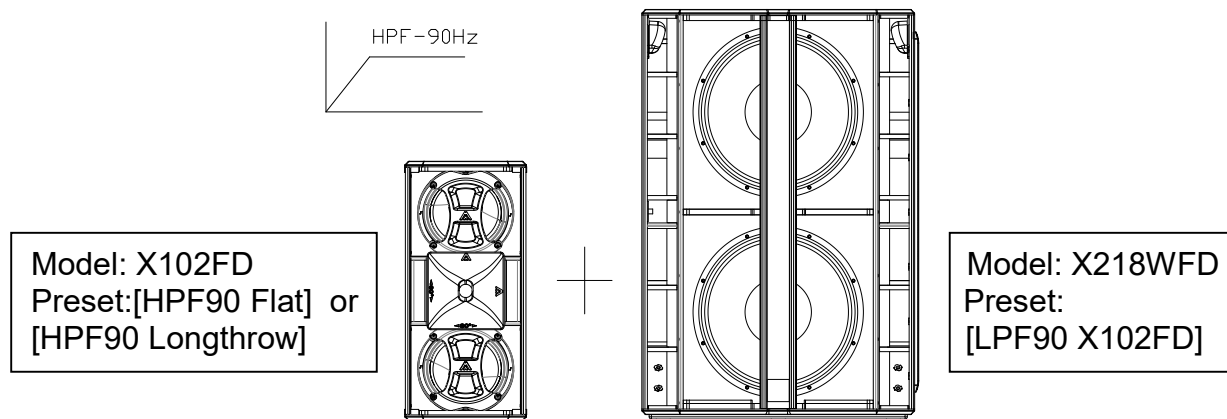
SYSTEM ALIGNMENT

The system is pre-aligned from the factory. Do not forget to add the geometric delay depending on the configuration used.

3.2 As extension on floor for X102FD

The X218WFD provides an extension of the bandwidth in the low end for the Xcellence Point Source system X102FD, down to 25 Hz. The overall system operates over the nominal bandwidth 25 Hz – 19 kHz, -10dB.

The corresponding preset must be selected on the X102FD, as shown below:



SYSTEM ALIGNMENT

The system is pre-aligned from the factory. Do not forget to add the geometric delay depending on the configuration used.

3.3 General purpose (Standard) presets

These presets can be used to match the X218WFD with any other satellite or array system. These presets are not prealigned, so a time alignment with the satellite or line array system is recommended. There are three standard presets, and they are defined by the Low Pass Filter frequency, which can be selected at 80, 90 or 100Hz:

LPF80 Standard
LPF90 Standard
LPF100 Standard

3.4 Cardioid presets

The X218WFD enables the combination of three or multiple of three subwoofer cabinets in an array to provide exceptional directivity at low frequencies. High directivity at low frequencies has two main effects on the sound field: firstly, the low frequency level behind the subwoofer cabinets is greatly reduced; secondly, in closed venues the diffuse sound field at low frequencies is reduced so the low frequency reproduction is much more precise. The typical operating range of a traditional subwoofer tends to be like a monopole, i.e. tends to radiate with the same energy in all directions. This behaviour implies that the control of radiation at low frequencies is very difficult because the wavelengths are very large compared to the size of the source (8.5 m at 40 Hz).

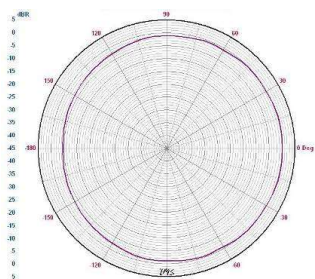


Fig.4. Traditional polar pattern of a subwoofer at 40 Hz

To increase the directivity at low frequencies we must transform the omnidirectional performance into a cardioid performance. This can only be achieved by various sources, arranged in a certain position, to which we apply a specific phase, filtering and delay. That is, we need to reproduce two signals with the same frequency and similar amplitude which will have a difference in phase of approximately 180° at a certain point of the sound field.

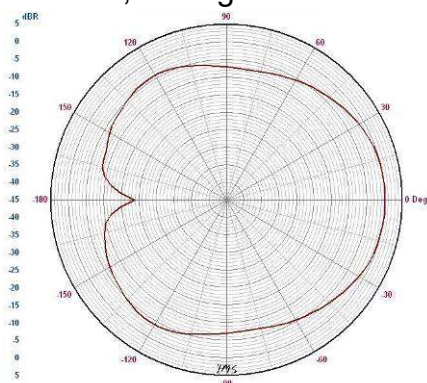


Fig.5. Cardioid pattern

3.4.1 With 3 units

The X218WFD can generate an uncompromised cardioid behaviour, which means that there is no need for special cabinets, enabling the use of the system's full efficiency with just "one finger".

In its minimum and standard configuration a cardioid setup consists of a horizontal line of three subwoofer cabinets.

Only one subwoofer is needed to compensate for the energy of the other two radiating to the front. Then, the cabinet facing to the back (to the stage) should be located in the centre of the column.

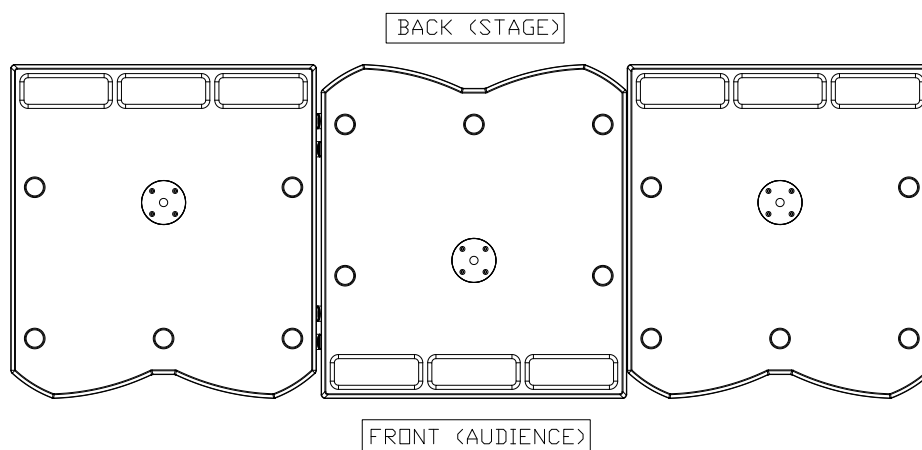


Fig.6. Cardioid configuration for X218WFD subwoofer (3 units)



The cardioid preset must only be applied to the rear facing subwoofers. The front facing subwoofers must use the corresponding front-facing preset, as shown in the Table below:

X218WFD Preset (rear)	X218WFD Preset (front)	Satellite/ Array Model	Satellite/Array Preset
CARD80 STANDARD	LPF80 STANDARD	Generic, HPF 80 Hz	Subwoofers must be time aligned
CARD90 STANDARD	LPF90 STANDARD	Generic, HPF 90 Hz	Subwoofers must be time aligned
CARD100 STANDARD	LPF100 STANDARD	Generic, HPF 100 Hz	Subwoofers must be time aligned
CARD60 X212	LPF60 X212	X212AFD	HPF60 FLAT HPF60 NEARFIELD HPF60 LONGTHROW
CARD60 X212	LPF60 X212	X212AFD	HPF60 FLAT HPF60 NEARFIELD HPF60 LONGTHROW
CARD90 X102	LPF90 X102FD	X102FD	HPF90 FLAT HPF90 LONGTHROW

Fig.7. Correspondence of rear and front presets for cardioid applications

IMPORTANT NOTE: Due to the internal set-up of the cardioid presets, the threshold level (limiter) of the front facing subwoofers must be reduced by -2 dB when using stacks of 3 subwoofers.

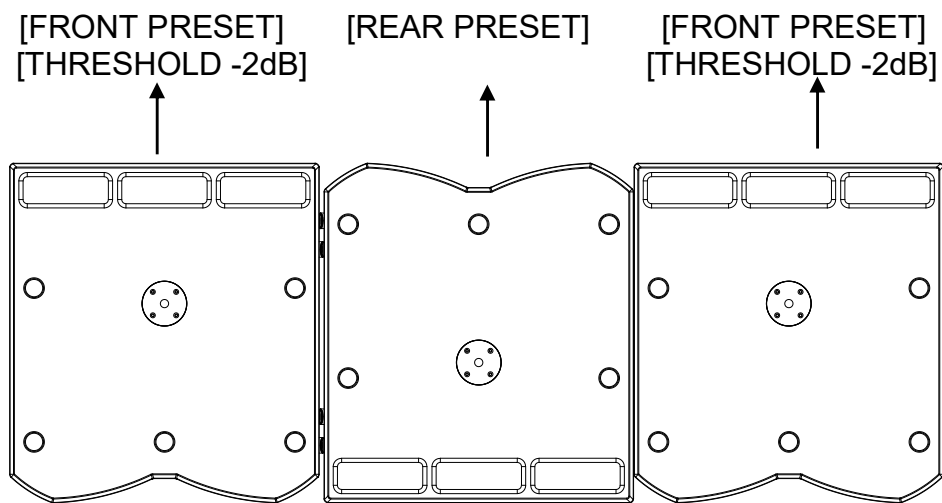


Fig.8. Cardioid presets for X218WFD subwoofers (3 units)

3.4.2 With 6 units

In its extended configuration a cardioid setup consists of a horizontal line of six subwoofer cabinets. This is the optimum configuration when using X218WFD with X212AFD. Only two subwoofers are needed to compensate for the energy of the other four radiating to the front

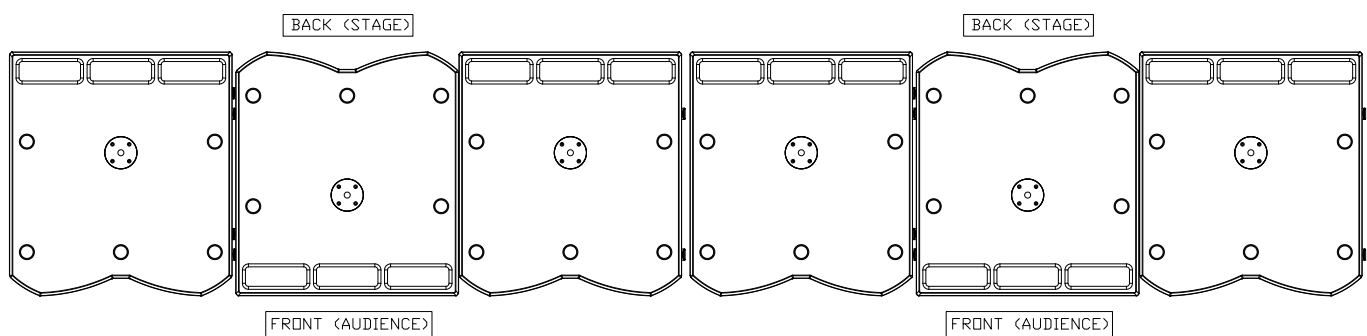


Fig.9. Cardioid configuration for X218WFD subwoofers (6 units)

IMPORTANT NOTE: Due to the internal set-up of the cardioid presets, the threshold level (limiter) of the front facing subwoofers must be:

- a) reduced by -5 dB when using [LPF60 X212]
- b) reduced by -4 dB when using [LPF80 X212]

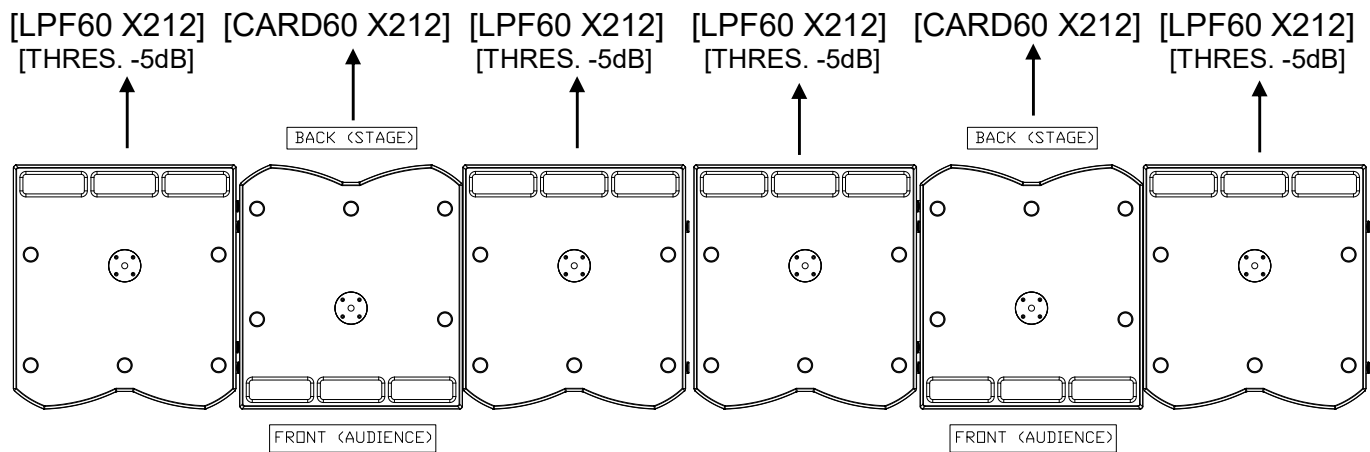


Fig.10. Cardioid presets for X218WFD subwoofers (6 units) and [LPF60 X212] and [CARD60 X212]

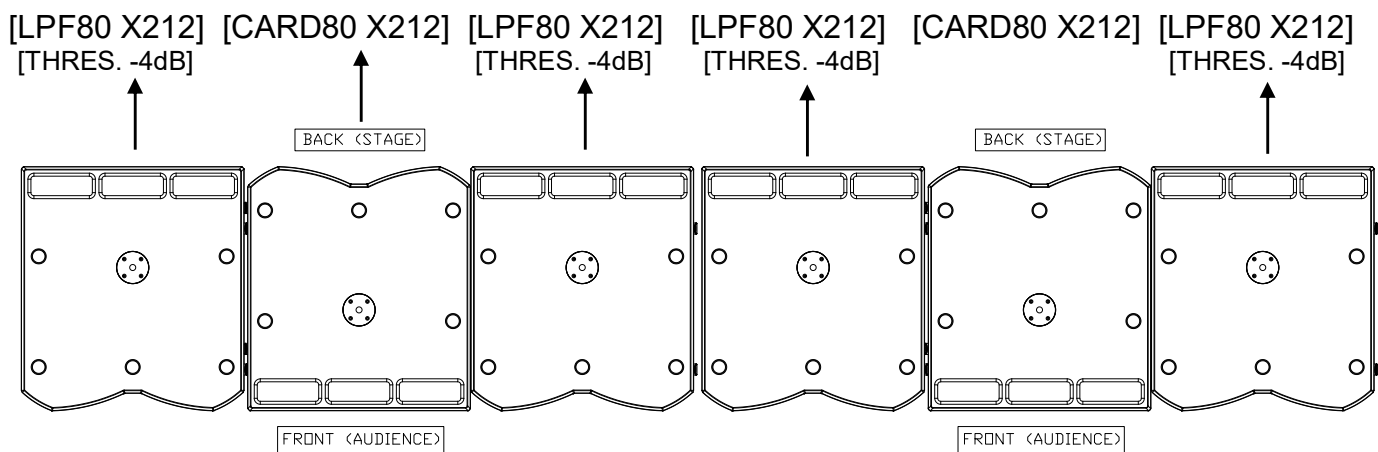


Fig.11. Cardioid presets for X218WFD subwoofers (6 units) and [LPF80 X212] and [CARD80 X212]

When placing the subwoofers in a cardioid configuration keep a distance to walls of at least 60 cm in order not to affect the radiation of the central reversed cabinet.

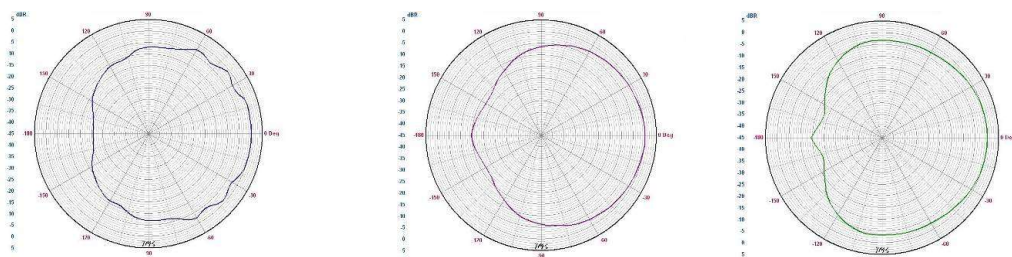


Fig.12. Back energy rejection at 40 Hz / 50 Hz / 63 Hz

4 CONTROL AND CONNECTION PANEL

The X218WFD control panel contains the following elements:



Fig.13. X218WFD control and connection panel

A) TOUCHSCREEN: Displays information about the System status: current preset, network IP, amplifier temperature and signal input level. Allows the user to configure the system without the need of an external computer: IP address setting, Preset selection, Delay, Gain, Limiter, ECO mode on/off, Signal LEDs on/off, etc.

NOTE: The default PIN to access the setup menu is “1234”.

B) STATUS LEDs: Report a special event happening in the system:

- **Protect:** (Red) A fault condition is being reported by the amplifier. If this LED is constantly lit even after resetting the device, please contact the technical service.
- **Standby:** (Orange) This led is lit when the equipment is set in Low Power consumption mode. This can be done via the touchscreen (ECOMode ON) or via PC. When ECOMode is in AUTO, the system will go into Standby after 5 minutes without signal at the input. When signal is present again, the system will go automatically into normal mode.
- **Mute:** (Red) The system is muted (amplifiers are disabled). The system can be muted from the PC remote control or from the touchscreen.

IMPORTANT: When the amplifier is in MUTE, the PROTECT LED will be also lit to show that the amplifier is disabled. Also when the system is waking up from the STANDBY mode, the PROTECT led will be lit for a few seconds. Under these circumstances the PROTECT LED is reporting that the amplifier is disabled, but not a fault condition.

C) SIGNAL LEDS: Indicate the status of the audio signal in the system:

- **Overload:** (Red) The input signal exceeds +14dBu (4Vrms), so the input compressor is engaging. Avoid the continuous lighting of this led in order to preserve the dynamic range of the audio signal.
- **Limiters:** (Orange) The output limiters of the system are being engaged. When this led blinks, the maximum power of the system is being reached. Avoid the continuous lighting of this led in order to preserve the dynamic range of the audio signal.
- **Input:** (Green) Signal is present at the input. This LED will light when the signal reaches -16dBu.

NOTE: The SIGNAL LEDs may be deactivated by selecting the option “LEDs OFF” in the PC software.

D) AC INPUT/OVERVOLTAGE PROTECTION: These LEDS show the status of the AC mains supply.

- **POWER ON:** (Blue) When lit, the equipment is ON and the AC input level is within the permitted range (up to 250 VAC).
- **>250V:** (Red) When activated, the AC voltage is permanently out of the permitted range of the equipment, so it will remain under protection until this condition is solved. Revise your connections and mains power installation and consider that other equipment connected to this line may have been damaged.

The connection panel has the following parts:

E) NETWORK: Two 8-pin RJ45 / EtherCon® compatible connectors for the connection to Ethernet networks up to 1Gbps. This connection can be used for remote control via software (DSPStudio) and for audio signal input via Dante™ audio networking. Please refer to Amate Audio DSPStudio Quick Installation Guide for more information on remote connection. The two connectors are interconnected by means of an internal switch, so they can be used interchangeably and allow the chain connection of several boxes.

IMPORTANT: If Dante is used it is not recommended to chain more than eight units, due to latency reasons.

F) BALANCED INPUT/LINK:

XLR-3 Female balanced signal connector for signal input.

XLR-3 Male connector for parallel connection of various cabinets with the same input signal.

Nominal Input sensitivity: +2dBu (1 Vrms)

Maximum Input Voltage without input compression: +14dBu (4Vrms)

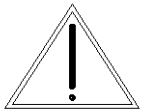
Maximum Input Voltage without clipping: +20dBu (8Vrms)

IMPORTANT: Please always use balanced microphone cable with the following pin assignment:

1= Shield (Ground) 2= Live (+) 3= Return (-)

G) AC MAINS INPUT/LINK: Mains supply connection via PowerCon.

- Blue connector for AC in.
- Grey connector to feed other units in parallel. Linking up to two units is possible, provided that a quality cable of a minimum section of 3x2.5mm² is used. Connecting more than two units in parallel may lead to a voltage drop in the cable that will reduce the equipment performance.



Always use mains power cable supplied by manufacturer.
Never connect the Xcellence cabinets to an unearthed mains supply or by using an unearthed mains cable.

5 CONNECTING

5.1 Parallel connection

5.1.1 Analog Audio Signal

Connect the signal (mixing desk output) to INPUT on the first unit. Use the LINK output to transfer the INPUT signal to the second unit and thus sequentially for further units. All of the units in this chain must be switched on.

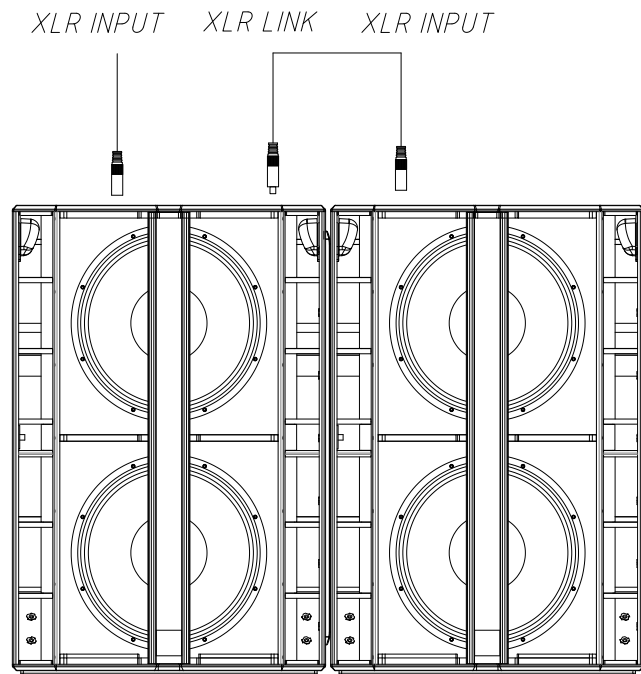


Fig.14. Parallel connection for the X218WFD (signal). You can link several units.

5.1.2 Network

The two available Ethernet ports via the EtherCon RJ-45 connector are internally switched and both can be used as input and link to other cabinets. All of the units in this chain must be switched on.

The number of units allowed in parallel or daisy-chain depend on whether Dante audio networking is being used.

When using Dante, a maximum number of 8 cabinets is permitted due to latency reasons. When not, there is no specific limit for daisy-chaining (control and monitoring using DSPStudio®).

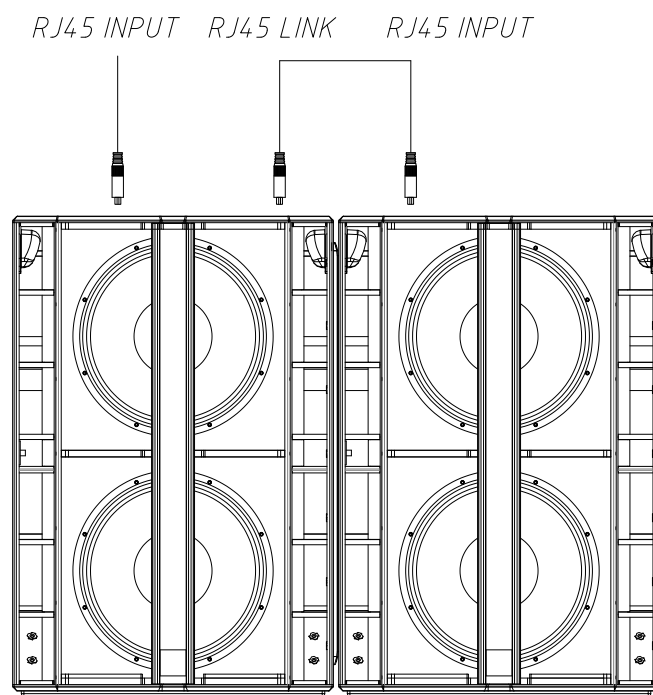
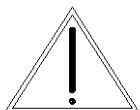


Fig.15. Parallel connection for the X218WFD (network). You can link up to eight units when using DANTE networking, or more when not using it.

5.1.3 Mains Power

For the mains connection in parallel use the cable with grey Neutrik PowerCon NAC3FCB at one end and the blue Neutrik PowerCon NAC3FCA at the other end.



Do not connect more than two X218WFD units using the AC Mains link connector. Do not connect Xcellence series units in parallel using PowerCon-PowerCon without earth.

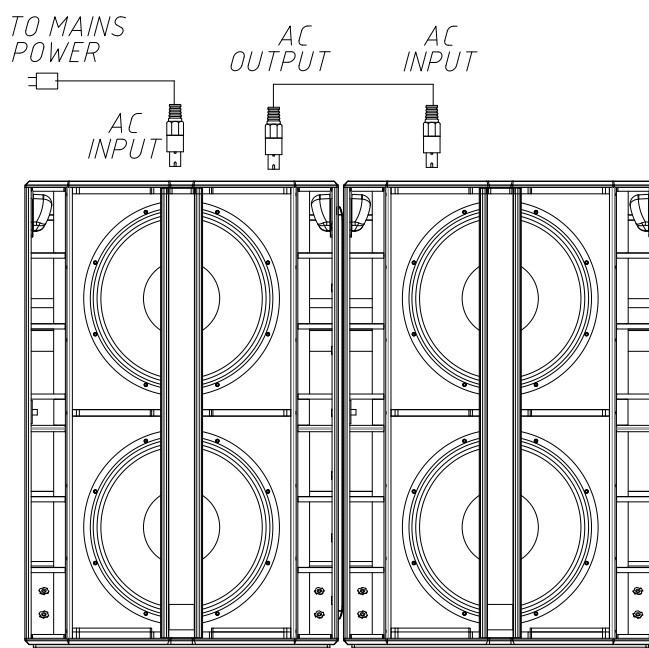


Fig.16. Parallel connection for the X218WFD (mains). You can link up to two units.

6 OVERVOLTAGE PROTECTION

The active Xcellence series models incorporate an exclusive protection by Amate Audio against mains voltage overload and other related problems (loss of neutral, connection between phases, etc.). In the mains input an electronic circuit compares the input voltage with a reference value. When the input exceeds 250 Volts, the circuit reacts by blocking the input tension until it returns to its correct limits (230V +/- 10%). When the overvoltage LED lights up red, the unit stops running, until the correct voltage is re-established.

Generally the cause of such an anomaly tends to be a neutral voltage drop or incorrect connection of the equipment to 400V supply. Whenever the overvoltage LED lights up, check the tension of the electrical phases: other devices in the sound system are also at risk of electrical fault and severe damage.

7 MOUNTING AND INSTALLATION

7.1 Pole mount

The X218WFD incorporates a M10-M20 socket on their upper side for the attachment of a pole for point source cabinets, like the X102FD or a stacking frame (FR-X210 for X210 cabinets). On the lateral side it incorporates a M10 thread for a stacking frame (FR-X212 for X212AFD cabinets).

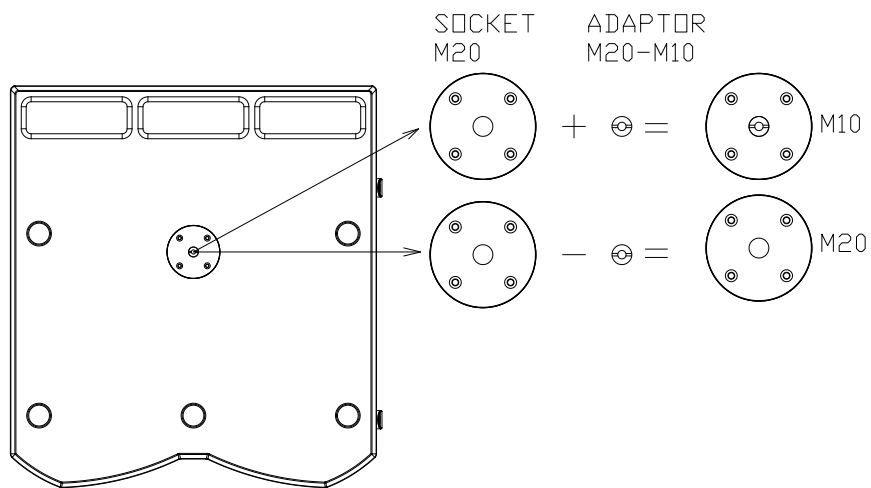


Fig.17. M10-M20 socket on X218WFD

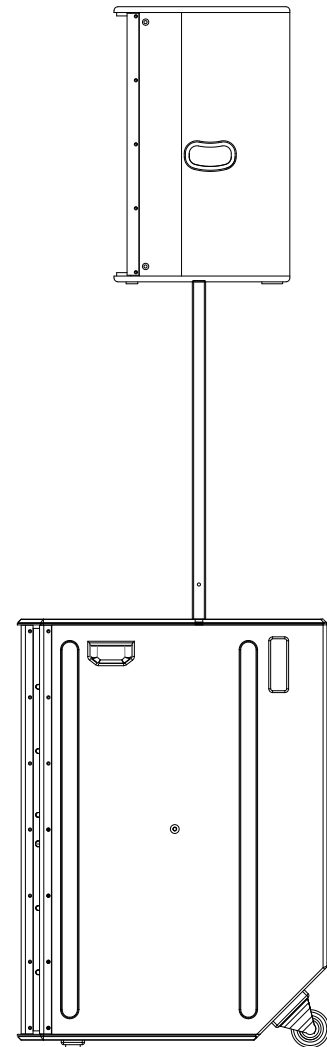


Fig.18. Pole mount on X218WFD using M20 socket

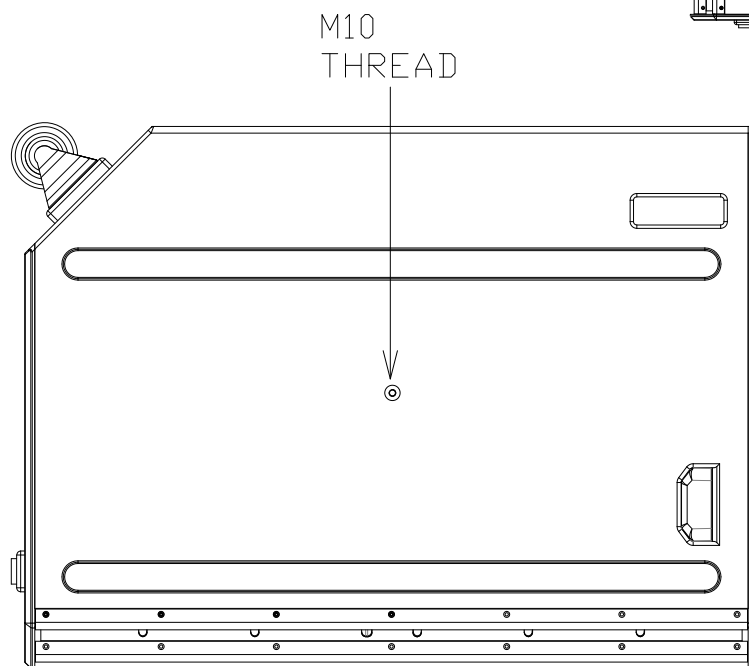


Fig.19. M10 thread on X218WFD

7.2 Stacking with X212AFD

The FR-X212 is an optional accessory for stacking the X212AFD with X218WFD. See “FR-X212 user’s manual” for more information.

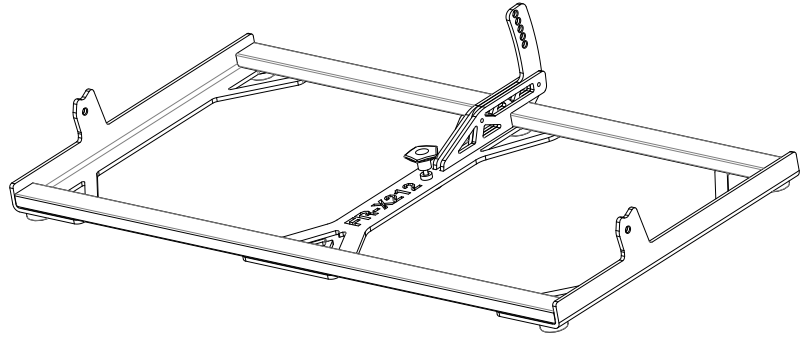
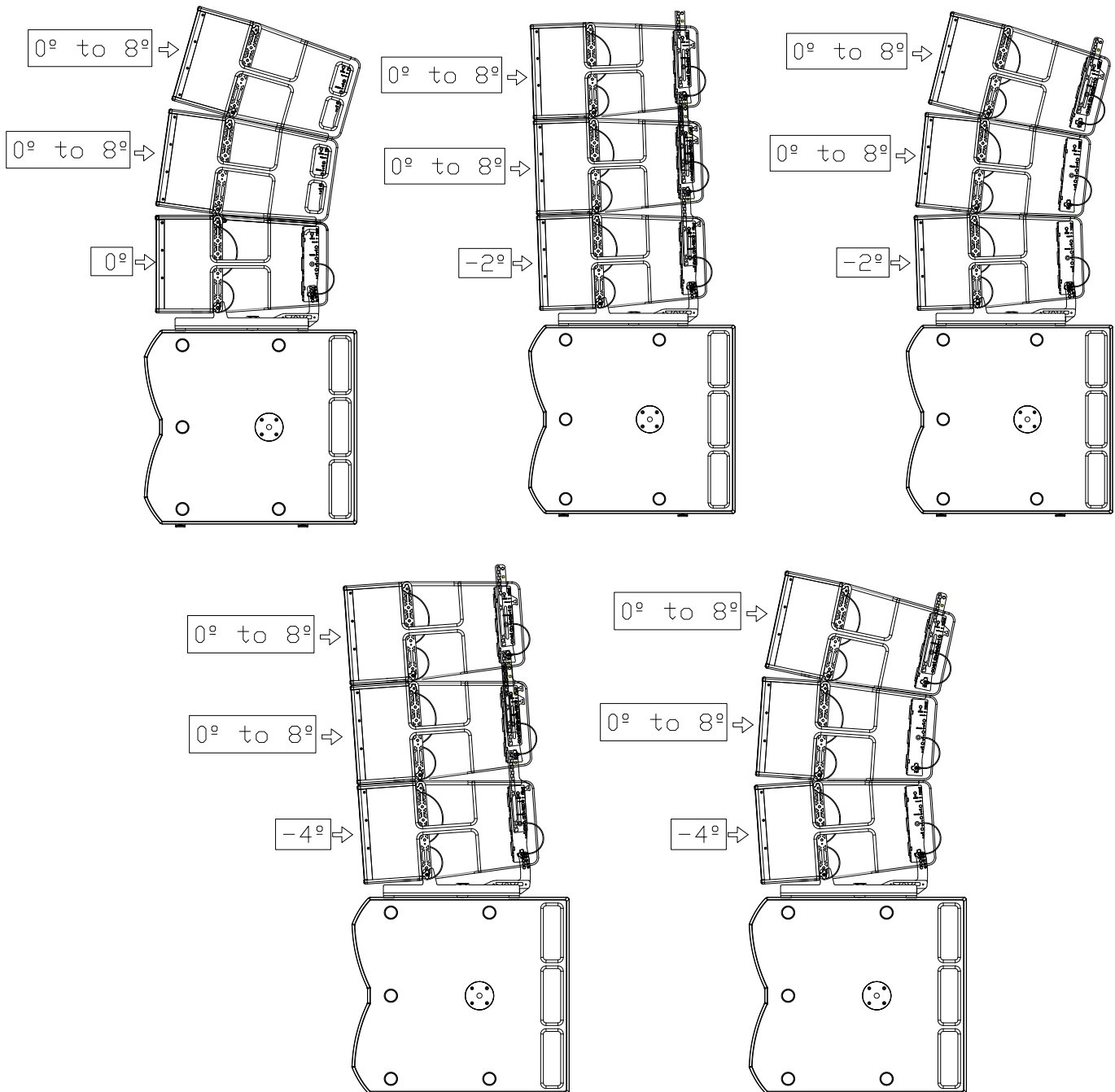
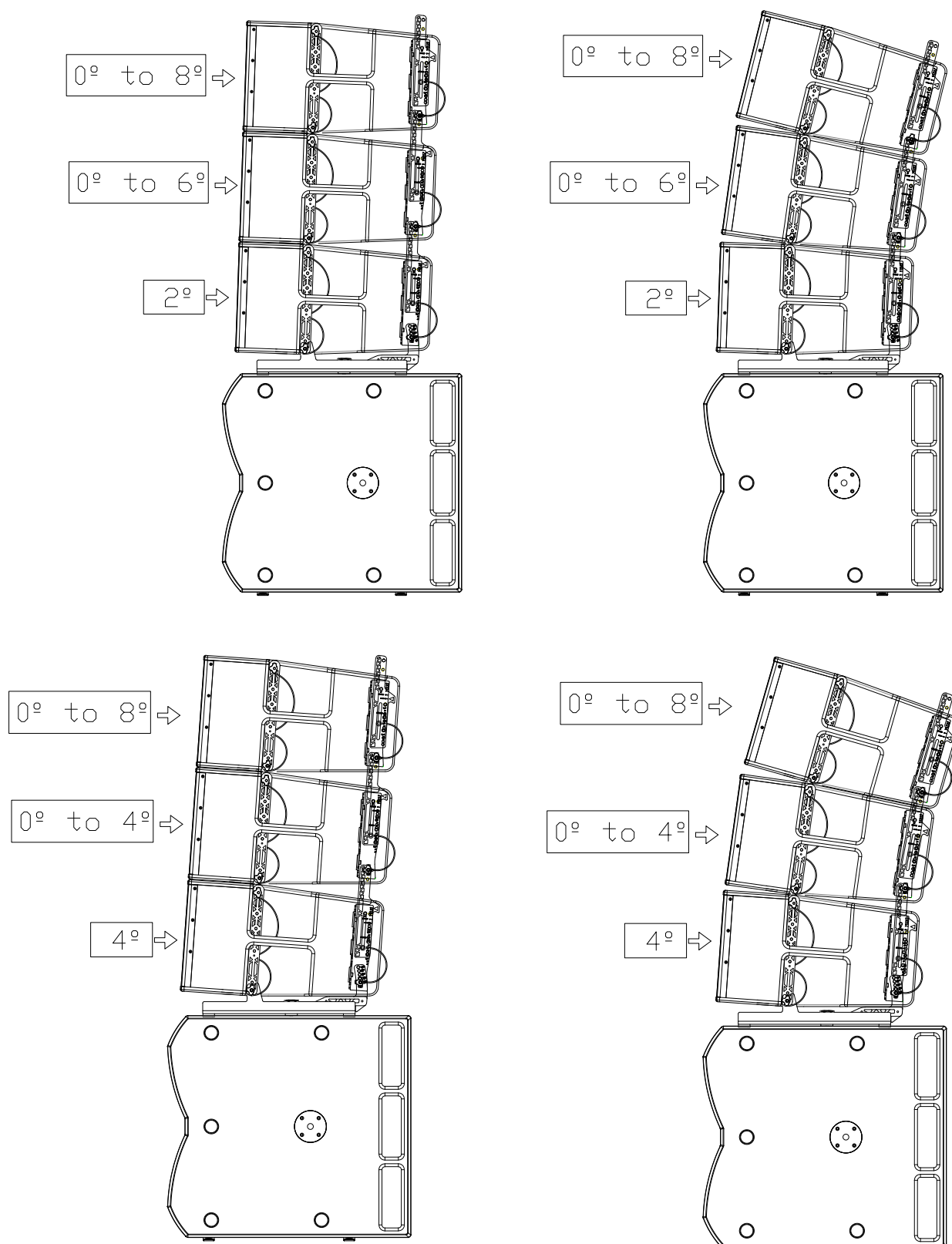


Fig.20. FR-X212 frame stacking



**Fig.21.** FR-X212 stacking system

7.3 Stacking with X210

The FR-X210 is an optional accessory for stacking the X210 with X218WFD. See “FR-X210 user’s manual” for more information.

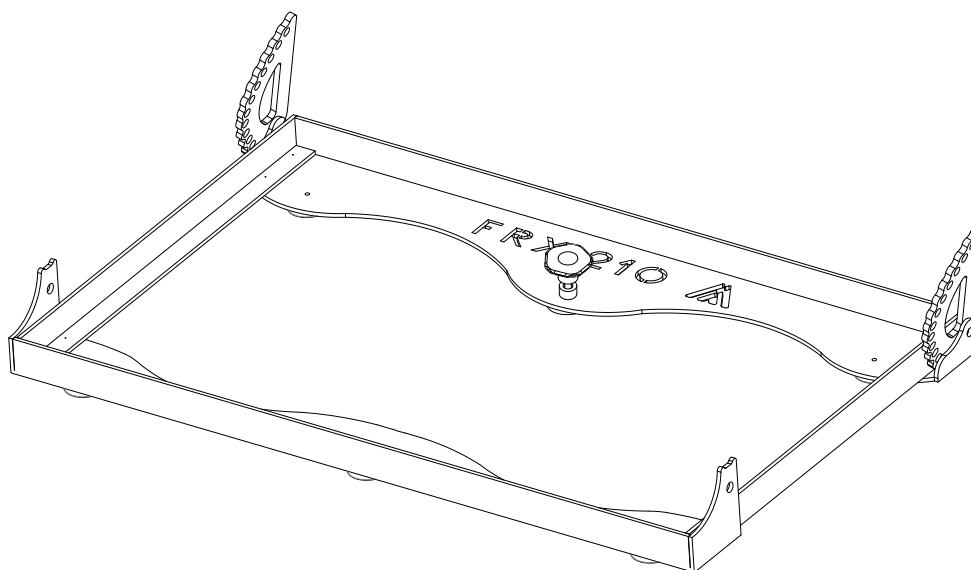


Fig.22. FR-X210 stacking frame

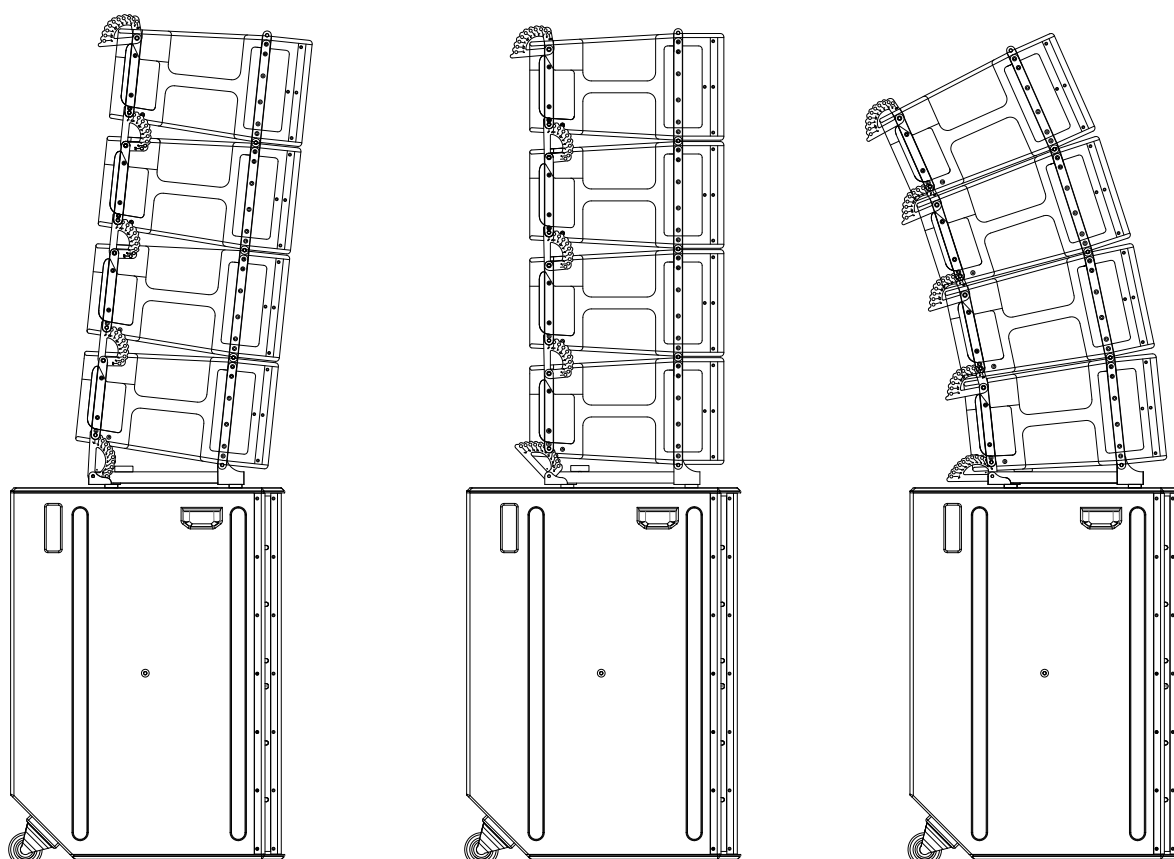


Fig.23. FR-X210 stacking system

7.4 Stacking with X208

The FR-208R is an optional accessory for stacking the X208 with X218WFD. See “FR-208R user’s manual” for more information.

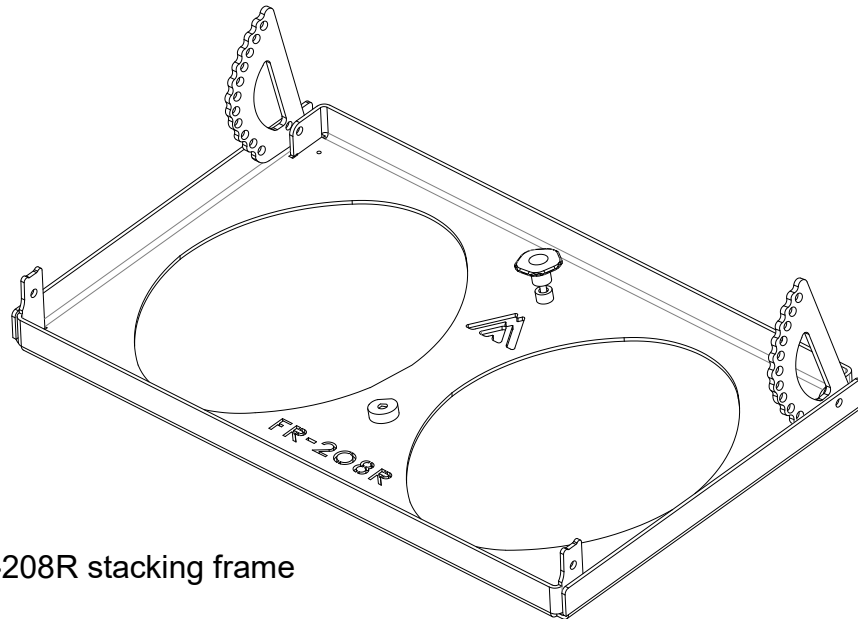


Fig. 24. FR-208R stacking frame

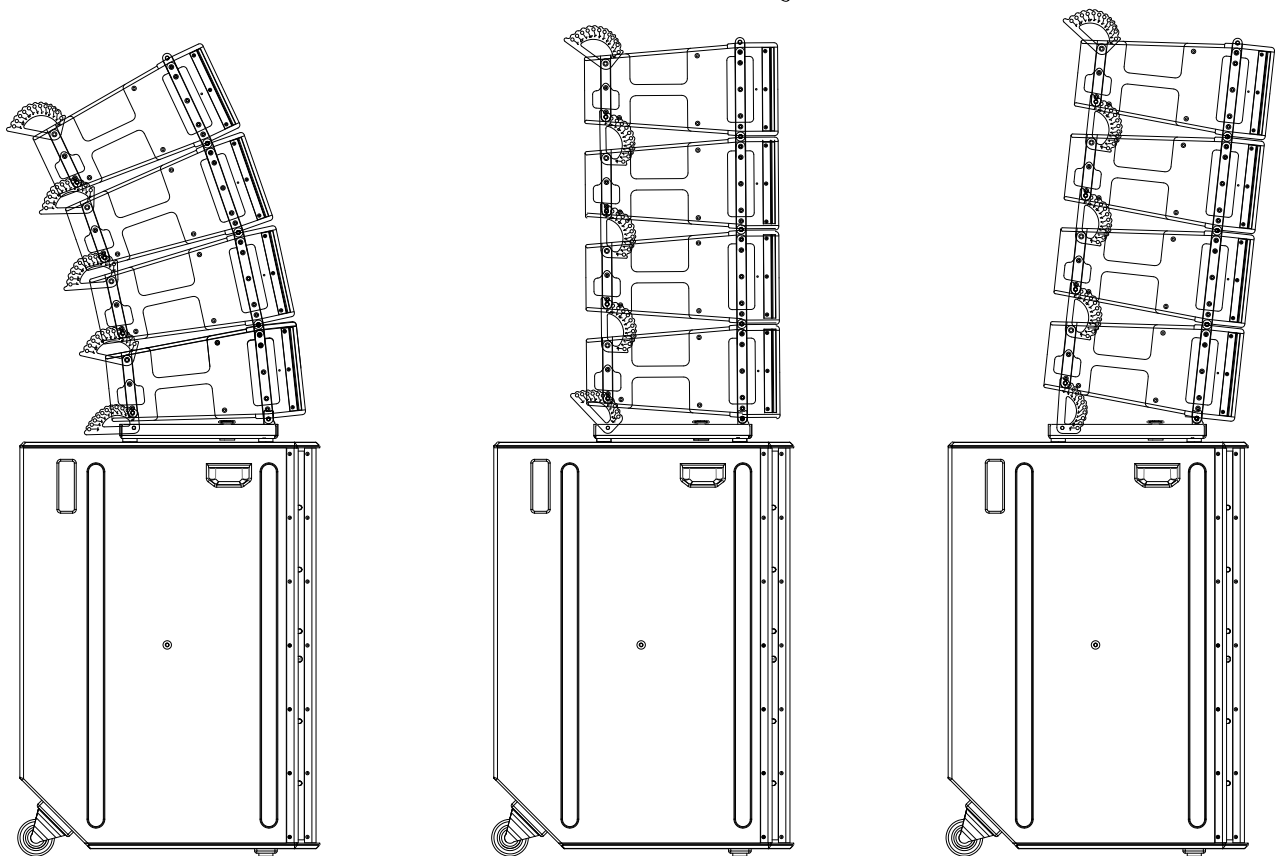


Fig. 25. FR-208R stacking system

8 OPTIONAL GRILLE GRL-218WF

The GRL-218WF is an optional grille for X218WFD subwoofers. With the GRL-218WF all the front side of the cabinet will be completed protected. See “GRL-218WF user’s manual” for more information.

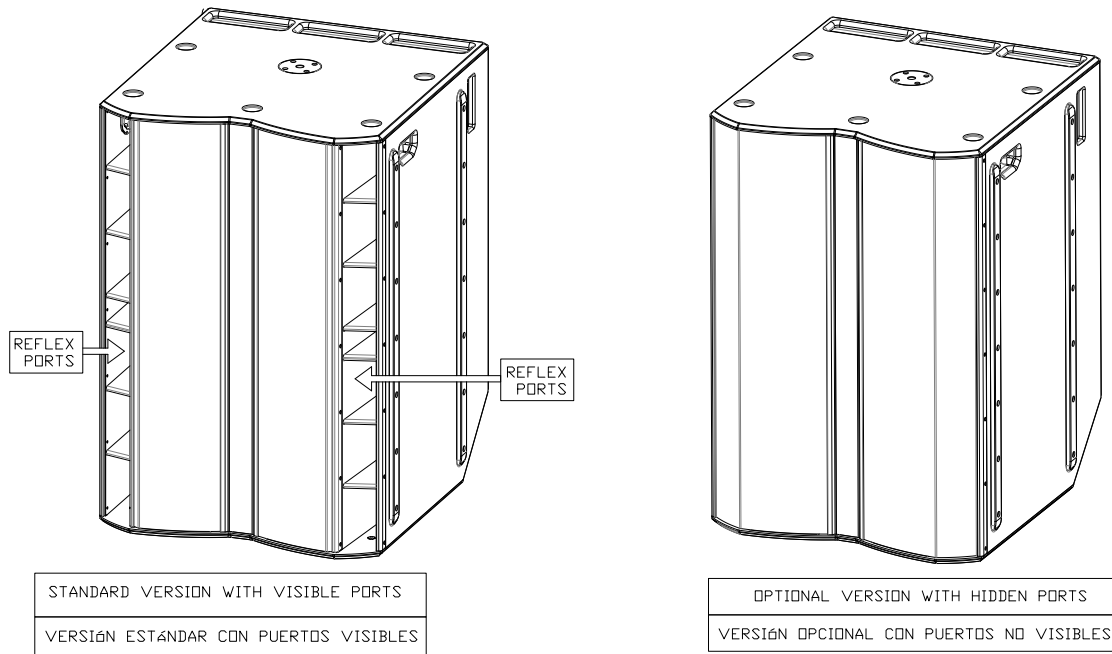


Fig. 25. X218WFD grille options

9 TROUBLESHOOTING

9.1 System not powering up

- Check the Overvoltage Protection leds
 - No LED lit: Check if voltage is arriving to the PowerCon socket, and if mains cable is in good condition. If yes, the overvoltage circuit may be damaged. Contact support.
 - Red (>250V): Voltage arriving to the PowerCon socket is above 250VAC. Check the mains voltage is in the rated limits (230VAC +/-10%). If mains voltage is OK, the overvoltage circuit may be damaged. Contact support.
 - Blue (Power On): Overvoltage circuit is functioning properly. If none of the Status LEDs or the touchscreen are being lit, the fuse in the power module may be blown. The replacement of this fuse must be carried out by specialized personnel as it is an internal component of the amplifier module.

9.2 No output sound

- Check with the indicators (Signal Present LED & Touchscreen) that the signal is being received by the system.
- Check that the signal cables are in good condition and connected at both ends
- The mixer output level must not be at minimum.
- Check that the mixer channel is not Muted.

- Check that the system is not in MUTE or STANDBY (MUTE LED or STANDBY LED) not lit. If yes, go inside the menu using the touchscreen and deactivate them:
 - To disable the Standby go to SETUP and select STANDBY OFF.
 - To disable the MUTE go to AUDIO, GAIN and push the icon with a loudspeaker.
- Check that the system GAIN is not set to the minimum. To do that, go to the AUDIO setting using the touchscreen, select GAIN and move the slider to the 0dB position.

9.3 Distorted output signal

- The system is being saturated with a very high input signal, frequently caused by the same mixer. Check the output level or mixer gain channels.

9.4 Poor bass levels

- Check the polarity on the signal connections between the mixer and cabinets. If any of the Pins (1, 2 or 3) have been inverted at the cable ends, this will cause significant performance and sound quality loss.

9.5 Noise and Hum

- Check that all the connections to the active units are in good condition.
- Avoid intertwining between mains supply cables or proximity to transformers or Electromagnetic (EMI) emitting devices.
- Check there is no light intensity regulator in the same AC circuit as the unit. ALWAYS connect the sound and light circuits in different phases.
- Check that there is a proper connection to EARTH in the electrical installation.

9.6 Forgotten PIN for Touchscreen

- The default PIN is "1234".
- Should you have changed the PIN and forgotten it, follow these steps:
 - Turn the system off.
 - Turn the system on.
 - When the display shows the word "Initializing", press anywhere on the touch screen during at least 5 seconds.
 - The PIN will be restored to its default value "1234".

10 TECHNICAL FEATURES

	X218WFD
Analog Audio Input	
Sensitivity	+2dBu
Impedance	20kΩ
Audio Network Input	
Type	Dante
Channels	1 channel @ 48kHz
Mains Supply	
Type	Univ. switch mode power supply
Nominal input	85-265 VAC/45-65 Hz
Average current draw	9.4A
AD/DA converters	24 bit / 48 kHz
DSP architecture	64 bit
Frequency response (-10 dB)	25Hz-120Hz
Maximum output level (1m/continuous)	141 dB
Amplifier (program)	5000W
Nominal directivity (-6dB)	omnidirectional
Components	
LF	2 x 18" neodymium woofers (4" voice coil)
Cabinet	
Type	Bass-reflex
Height	1114 mm
Width	751 mm
Depth	815 mm
Weight (net)	99 Kg
Connectors	2 x AC PowerCon (input, link) 2 x XLR (input, link) 2x Ethercon RJ45 for Ethernet (connection/link)
Material	Multilayer birch plywood, steel front grilles with acoustic grey cloth
Finish	Hi-resistance black Polyurea coating

A ANNEX. TOUCH PANEL OPERATION

Amate Audio's X218WFD internal DSP parameters could be tuned using its integrated LCD touchscreen.

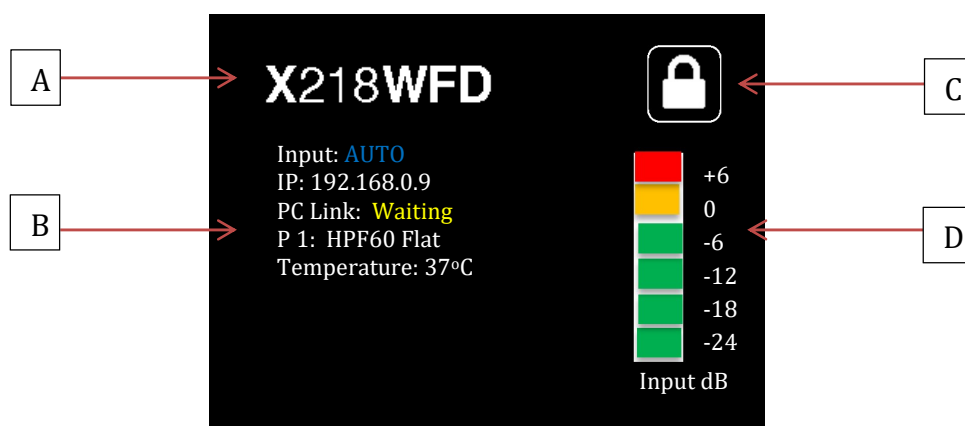
The explanations here are valid for firmware version 2.0.0 and newer.



A.1 Main screen

Just after turning on the loudspeaker unit, a first screen shows the: Amate Audio's logo, firmware version and the processing version. Once the system is initialized, a welcome screen shows a picture of the system and the serial number.

When all the start-up process finish, the main screen is shown like:



A. Loudspeaker model

B. System status

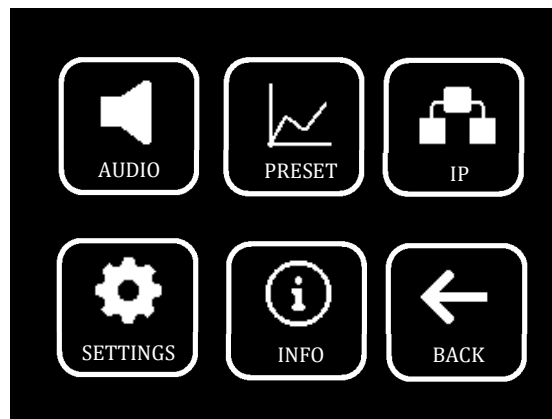
- INPUT: INPUT: Shows the selected audio source. The options are: **ANALOG** for XLR analogue input, **DANTE** for the RJ45 VoIP Dante digital audio input or **AUTO** for an automatic selection of the audio source. In presence of Dante audio, the message *Flow OK* is shown
- IP: IP address of the Ethernet module
- PC Link: Connection status with DSP Studio. There's three states: **Initializing** when IP is configuring, **Waiting** for no connection

established and **Link OK** when the unit achieves successful connection with DSPStudio

- P X/M X: Current preset loaded into the DSP. For user's memories the name starts with M_
 - Temperature: Internal amplifier temperature
- C. PIN lock indicator: If a PIN lock was entered in settings, the lock icon is shown closed. In this case the unit will claim for a valid PIN. For unlocking the unit, push on the lock. When the unit is unlocked, the lock will be open.
- D. Signal indicators: Shows the input signal level in decibels (dB).

A.2 Settings screen

For accessing to the settings menu, just push anywhere in main screen.



Each sub-menu contains the following settings:

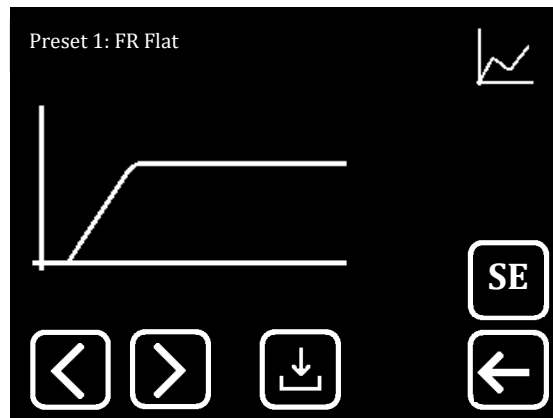
- AUDIO: General audio parameters set-up
- PRESET: Preset selection. It's possible to save user's presets.
- IP: Configuration of the Ethernet's module in order to enable communications with our control software DSP Studio.
- SETTINGS: Other unit's parameters configuration
- INFO: Detailed system information and system status
- BACK: Go back to main screen

A.3 AUDIO sub-menu



- **GAIN:** Gain reduction setup. It could be configured using a *fader* with a resolution of half a dB. Moreover, a mute button is available. An X in front of the speaker icon is shown when the unit is muted.
- **LIMITER:** Limiter threshold configuration. A Gain Reduction level indicator is available for proper threshold check.
- **DELAY:** Adjustment of the time shift among input and desired output. There's two ways of setting it: In meters or in milliseconds. Simply we've to push in the corresponding box. The space-time conversion is automatically computed. In addition, a polarity control button is available: + for positive polarity, - for negative polarity.
- **EQ:** This sub-menu helps to check the status of current filters in the DSP. These filters are applied on the top of the chosen base preset. An Ethernet communication with DSP Studio is mandatory in order to enable each filter. For the enabled filters a bypass button is available for controlling each one directly from the loudspeaker unit.
- **SAVE:** Access to DSP internal memory. Here we can save all the audio configuration in one of the free internal memory space the unit has. Push on the *Memory* box for choosing one available. Push on *Memory name* for naming it. After the previous steps, push on Save button for writing on the DSP the memory
- **BACK:** Go back to settings screen

A.4 PRESET sub-menu



The loudspeaker unit contains several sound presets we can check inside this submenu. The browsing arrows allow us to change between presets. Press *SEL* button for loading the preset in the DSP. There is a shortcut for internal memory, so we can save a preset straight from this sub-menu.

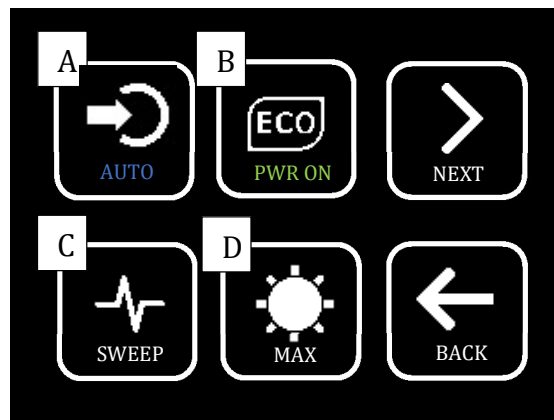
A.5 IP sub-menu

The screenshot shows a black background with white text and graphics. At the top right is an icon of two connected squares. Below it, the text 'IP Address' is followed by four input fields containing the values '192', '168', '000', and '009'. Below that, the text 'Subnet Mask' is followed by four input fields containing the values '255', '255', '255', and '0'. To the right of the IP fields is a square button labeled 'ESC'. Below the Subnet Mask fields is a square button with a left arrow.

In this screen we can configure the internal Ethernet module. This loudspeaker unit doesn't have *Dynamic Host Configuration Protocol*, so is necessary to set up a fixed IP address. We recommend using the same values shown in the top image for the loudspeaker unit. In the control PC/laptop we recommend using with the same subnet mask and IP 192.168.0.1.

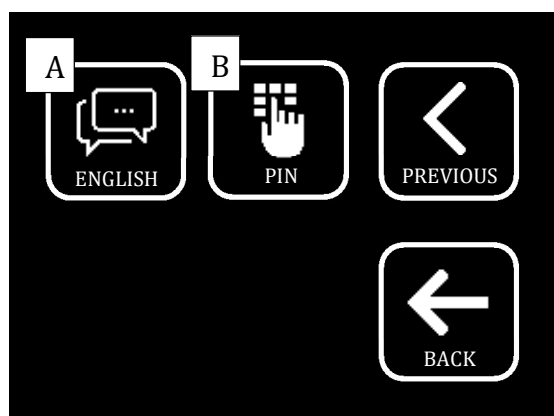
A.6 SETTINGS sub-menu

Settings submenu has two screens. We can switch one to another with the



- A. INPUT selection: Here we can choose which signal input the internal processor will use. The options are: ANALOG, DANTE or AUTO. In AUTO mode the unit automatically choose the signal input according to the presence of signal. If a Dante *flow* is present, the unit prioritises digital Dante signal. In case the Dante signal is no longer available, the unit will switch to use the analogue input.
- B. ECO mode: Enabling/disabling the energy saving mode. The options are:
- PWR ON: The energy saving mode is enabled
 - Standby: The energy saving mode is disabled
 - Auto: The energy saving mode will be enabled automatically after three minutes without input signal
- C. SWEEP: Diagnosis mode. The loudspeaker will emit a frequency sweep.
- D. Backlight: Three backlight intensities: MAX (Maximum), MED (Medium), MIN (Minimum)

On the next page:



- A. Language: Select the interface language. The options are: ESPAÑOL, CATALA and ENGLISH.
- B. PIN lock: Configure the access code for the unit when locked. When the loudspeaker unit is locked, a closed key lock icon is shown in the main menu. Push on it for unlocking the unit.

A.7 INFO sub-menu

Here we can find advanced information about the unit, as well as the most relevant configurations parameters.



*Great sound
from Barcelona
since 1972*

www.amateaudio.com

DECLARATION OF CONFORMITY

In accordance with EN 45014:1998

Manufacturer's Name: "AMATE AUDIO S.L."
Manufacturer's Address: C/ Perpinyà 25, Polígon Industrial Nord
08226 Terrassa, (Barcelona), SPAIN
Brand: "AMATE AUDIO"

We declare under our own responsibility that:

Product: Active speaker systems with DSP. Audio apparatus for professional use
Name: Xcellence X218WFD

Conforms to the following product specifications:

Safety: IEC 60065-01 + A1
EMC: EN 55022:2006
EN 55103-1:2009
EN 55103-2 2009
FCC Part 15

WARNING:

In accordance to EN55022, this is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Supplementary Information

The product herewith complies with the requirements of the:

Low Voltage Directive 2006/95/EC
EMC Directive 2004/108/EC
RoHS Directive 2002/95/EC
WEEE Directive 2002/96/EC

With regard to Directive 2005/32/EC and EC Regulation 1275/2008 of 17 December 2008, this product is designed, produced, and classified as Professional Audio Equipment and thus is exempt from this Directive.

Date of issue: July 3th., 2021

Signature:

AMATE AUDIO S.L.
N.I.F: B59103481
Violinista Vellsolà, 18
Tel: +34 93 736 65 65
08222 - Terrassa
Barcelona - SPAIN

Joan A. Amate
General Manager

Amate Audio S.L.



Conformity Marking

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XCELLENCE speaker systems have been designed, engineered
and manufactured in Barcelona – SPAIN by

Los **sistemas acústicos XCELLENCE** han sido diseñados y
fabricados en Barcelona – ESPAÑA por

Amate Audio S.L.

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