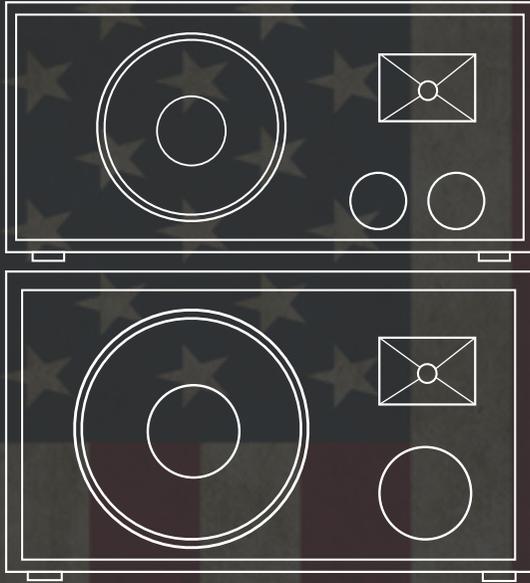


MATRIX ELEMENTS

GUITAR AMPLIFICATION

PROUDLY MADE IN THE USA



FR10/12 NEOLIGHT FULL RANGE SPEAKERS USER MANUAL

MODELS COVERED:
FR10, FR12



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MATRIX

AMPLIFICATION

Thank You

Congratulations on the purchase of your new Matrix Elements Full Range speaker.

Matrix amplifiers and speakers are the result of many decades of experience in the design of exceptionally robust and reliable pro audio equipment. They are designed to breathe life into your sound, by controlling your speakers with exacting authority through the uncompromising delivery of clean, undistorted power, from a package which is smaller and lighter than you might expect for the performance it delivers.

This manual will help you to get the most from your full range speaker. For maximum benefit, it is recommended that all instructions and warnings are carefully read.

For warranty service, please retain your receipt and all packaging that comes with the amplifier, as it has been specifically designed to transport the amplifier safely.

Unpacking

Please unpack and inspect your new speaker for any damage that may have occurred during transit. If damage is found, notify the carrier immediately.

Note: A suitable mains lead is provided and can be found packaged with the amplifier.

PLEASE RETAIN ALL FACTORY
PACKAGING FOR ANY FUTURE POSTAL
TRANSIT.

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CAUTION:

OBSERVE ALL SAFETY AND USAGE INSTRUCTIONS TO AVOID POSSIBLE DAMAGE TO EQUIPMENT AND EXPOSURE TO HAZARDS. THIS SYMBOL UNIVERSALLY FLAGS CAUTION NOTICES



LETHAL VOLTAGES PRESENT AT SPEAKER, CABLE AND AMPLIFIER TERMINALS; ENSURE ALL WIRING IS SAFE AND CORRECT BEFORE USE. THIS SYMBOL ALSO UNIVERSALLY FLAGS ELECTRICAL HAZARDS



DO NOT OPEN UNIT; LEAVE ALL INTERNAL SERVICE OPERATIONS TO A QUALIFIED TECHNICIAN. THIS PRODUCT IS CAPABLE OF PRODUCING SOUND PRESSURE LEVELS WHICH MAY DAMAGE HEARING.



THE USER IS RESPONSIBLE FOR EXPOSURE LEVELS AND USE OF HEARING PROTECTION.

OPERATING ENVIRONMENT:

This amplified speaker is designed for use in environments which protect it from rain, unusually high air humidity and temperature.

Place on a surface where it cannot be easily dislodged, potentially causing damage to the unit or injury to a person. Ensure that the location will not expose the amplifier to spillage of liquids/drinks, sprays/vapours or high humidity.

Ensure the amplifier is installed in a place which is not subject to abnormally high temperatures and maintain sufficient ventilation to prevent overheating.

For temporary use outside, apply similar caution however, careful to ensure placement accounts for changing weather conditions and that extreme wind/rain/heat will not find its way to the equipment.

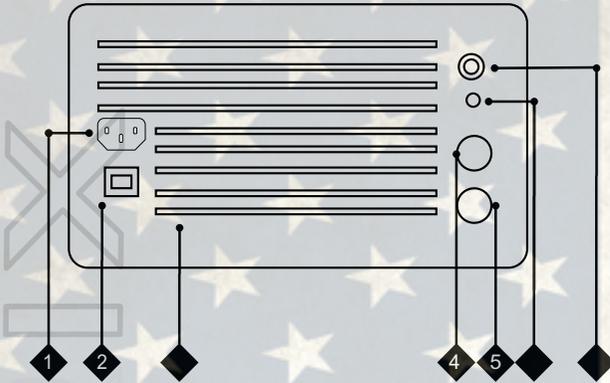
When taking any equipment from a cold environment (unheated storage, vehicles, etc), into a warm one, allow the equipment time to become acclimatised to the ambient temperature, as condensation is likely to form in the amplifier, potentially causing it to malfunction if put into service too soon.

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

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

FRONT AND REAR PANEL LAYOUTS: FR10 & FR12 MODELS

The rear panels on FR10 and FR12 are the same whilst the front share similar features.



(1) IEC Power socket:

Mains power is supplied to the amplifier by a standard 10 Amp IEC mains socket. An appropriate mains lead is supplied with the amplifier.

(2) Power Switch:

This switch controls the power supply to the amplifier. An indicator will light when the amplifier is receiving power.

(3) Cooling Fins:

Passive air cooled fins to dissipate heat from the amp unit.
CAUTION: Hot surface. Under heavy use this surface may become hot to touch. Do not cover or restrict the airflow.



(4) Input Signal Socket:

This is a Neutrik® combined female XLR and 1/4" jack socket. For cable runs of under 12", (ie. item on top of cab) standard good quality instrument leads should provide a similar level of RF shielding to XLR cables. For longer cables runs, balanced cables (XLRs) are recommended.

(5) Signal Link Socket:

This is a Neutrik® female XLR. This is designed to provide a signal "pass through" to allow the signal that is feeding the amp to be sent to an item such as a mixing desk or monitoring system or even another active cabinet. You may still want to use different outputs on your modelling device to do this as more tonal control may be achieved, depending on your source unit.

(6) DSP Function Indicator

This light will operate briefly when the DSP select button is pressed, to provide an indication of which function the DSP (Digital Signal Processing) is providing within the amp module and will then turn solid. Bear in mind that throughout all functions the active crossover integrity is still held.

NB: We've also added an audible guide consisting of a "beep" when the unit is powered on.

Light flashes once/ 1 beep: This is the default setting with no effect on the DSP function. Flat/neutral mode.

Light flashes twice/2 beeps: This setting approximates an Equal Loudness Curve (also known as Fletcher Munson Effect). This will boost both the highs and lows which is desirable when using the speaker at lower volumes (such as home or bedroom levels) to avoid altering your patches for home use. It is approximate for around 75db so some alteration of patches (or EQ) may be needed at higher or lower volumes.

Light flashes three times/3 beeps: This is the low shelf setting which sets a shelving EQ at 100hz. This may be used in situations to correct ground coupling or boomy hollow stages to correct the extra low end these situations may give.

NB: The module will reset to "flat" mode when powered off.

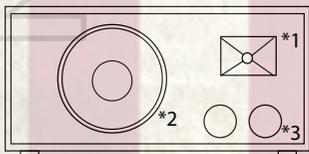
NB: Once the DSP mode has been selected, the light will come on after 5 seconds and remain constantly lit to serve as a power indicator. In this state it also functions as a clip/limit light which will flash around 10 times a second if the amp limit is reached.

(7) Volume Control:

This controls the overall volume of the amp module. The input sensitivity is set for 0db so if the volume of the amp is insufficient when full, try increasing the signal that is fed to the amps input to increase the overall volume. The amp is rated at 300w which should be more than sufficient for stage use (where levels tend to vary from 60-100w).

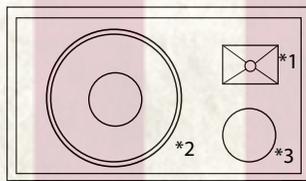


Front Panels FR10 & FR12:



*1 HF Driver

*2 LF driver



*3 Bass Port

GETTING STARTED, POWERING UP & CONNECTIONS:

Your FR Series speaker comes equipped with a power lead specific for the requirements of your country. Use only the correct lead with the correct rated fuse for your country's power requirements. Use of an incorrect lead or fuse rating could lead to damage of the amplifier and speaker.

1. Connect the supplied mains power lead to the IEC inlet on the rear of the speaker.

2. Connect the signal source (modelling device with cabinet simulations engaged) to the input on the amp module. Use a good quality instrument cable or balanced XLR lead. This will depend on the output connections of your source unit.

3. Making sure that the amp is turned off at this point, power up your signal source (this prevents any unwanted signal noise transmitted to the speaker. Now with the volume on the amp all the way down, power on the amplifier via the power switch located on the module. You may hear a slight "thump" as the unit is powered on. This is perfectly normal.

5. Adjust the controls of the input source to a required level (ideally 0db or .775v) and steadily increase the FRs volume until a sufficient level is achieved. Adjust the levels of the relevant volume controls until desired volume is achieved.

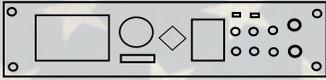
NOTE: The FR10&12s volume control is basically an attenuator. That means that to achieve full power at their specified load they requires a signal of .775v (0db) and the volume knobs up full. If you put a higher level signal into the amp, it will achieve it's full power rating earlier than at full volume position and inversely, if you put a lower level signal in, say -6db, the amps full volume will always be -6db of full power rating.



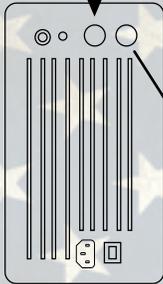
If your volume is lower than expected even with the amp module on full then look to increase the signal level going into the amp. This could be the individual patch volume or the master volume of the unit or indeed the send level of a preamp. Be aware of the noise floor of a unit as well. Turning something up full will usually turn up the amount of noise the unit generates. The FR10&12s amp modules are obviously designed to be turned up full and have a low level of noise/distortion but you may experience issues if you turn up the signal being fed into the Matrix too much and have the volume of the amp set too low. If the output is too great, the clip light (DSP Function light) will flash whilst the signal is active and some signal distortion may result. Lower either main volume or input signal to correct.

SOME TYPICAL SET-UP EXAMPLES:

Modelling System To One* FR Cab Mono

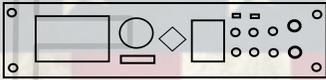


Main Mono/L Out to Input on FR Amp Module

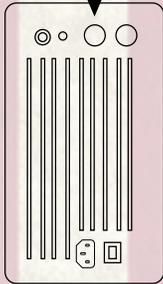


* Link output from FR amp module can be used to send signal on to mixing desk, In ear monitors etc. In the case of sending to another powered speaker this would give two FR cabs running a mono signal which may be preferable in larger venues

Modelling System To Two FR Cabs Stereo

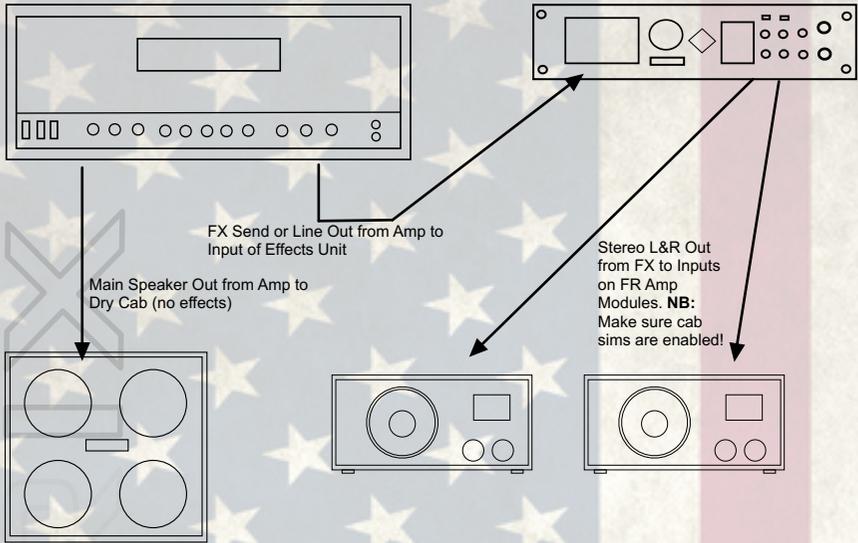


Main Stereo Outs to Inputs on FR Amp Modules



The link out from one or both FR cabs can be used to send the signal to another device such as mixing desk or in ear monitors. **NB:** If your modeller has multiple outputs though you may find you get more control over tonality and level from using those.

Wet/Dry/Wet Rig Hybrid FR/Traditional



NOTE: The above system can give a “best of both worlds” set-up utilising the flexibility of cabinet simulations through the attached FR cabs and the feel and response on a traditional rig with the center “dry” cab. You can even use a lightweight Neolight series cab from “yours truly” to provide a portable and lightweight solution. The unit “feeding” the FR cabs is providing effects and cabinet emulation. A standard “FX” only unit would not be suitable for this setup.

INTERNATIONAL VOLTAGE SELECTION

Your Matrix amplifier should be set at the voltage for your specific country if selected correctly at the time of ordering. It is possible however to select alternative region voltages internally via an on-board switch.

This allows for selection of 230v or 110v modes respectively at +/- 15%.

This is approximately 200 to 265v or 95 to 125v.

If you are unsure about undertaking this procedure, please refer to qualified service personnel.

Access to the internal switch requires some disassembly and again, if you are unsure, please refer to qualified service personnel. Firstly disconnect amplifier from all equipment & mains supply as lethal voltages are present inside. Next remove the screws that mount the module to the cab with a suitable cross head screwdriver. All screws except the top and bottom center ones should be removed. The module should now lift away from the cabinet but will still be attached to the speakers internally. The speaker wires must be unclipped from the terminal spades to allow full removal. Make a note of which colour goes where. Once removed the top and center screws can be undone to allow the rear of the module to be unattached. This allows access to the circuit board which contains the switch to change voltage. It is located next to an orange relay and clearly marked 230V and 110V.

With a finger or ballpoint pen move the switch shown into its desired position for your mains power voltage. Re-assemble amplifier ensuring all fixings are tight before further use.



NOTE: Ensure correct voltage for region is always selected, otherwise damage is likely to occur!

CABLE CHOICE & NEUTRIK® CONNECTORS

Whilst the Matrix FR10&12 cabs come with Neutrik® combi inputs for maximum flexibility it is important to use good quality cables and connectors. We recommend using Neutrik® branded connectors wherever possible. We've come across certain low cost 1/4" jacks not connecting properly as well as XLRs not "locking" which can cause loss or degradation of signal.

For the "link" output on the cabs we have only provided a standard XLR socket. This is to provide the best possible signal passage with the least interference, especially seeing as the distances involved may be further which increase the chance of RF interference.

TROUBLESHOOTING:

(1) THE POWER LIGHT DOES NOT ILLUMINATE

- Check that the mains supply is turned on.
- Check that the mains switch is turned on.
- Check mains lead for damage & check fuse. Replace lead if damaged, replace fuse if blown.
- Check internal fuse. Replace if blown.

(same type of fuse specified/installed must be used, do not change)

- If fuse re-blows refer to service personnel.
- Check voltage selector of amp is in correct position for required voltage.
- If fuse has not blown and the voltage selector is in correct position but the amplifier still malfunctions, refer to service personnel.

(2) NO OUTPUT VOLUME

- Check the signal from the input source. We've all done it. Forgot to turn the volume up on the signal source....haven't we? If the volume is up, make sure settings in I/O menus are ok.
- Check signal cables. Whilst this may sound obvious, it is perhaps the most common reason for malfunctions. Wear and tear on cables does take its toll and when the "tangle fairies" have invaded your gig bag, it's easy for breaks to occur. Have a spare and invest in a cable tester or multi-meter.

(3) LOW OUTPUT VOLUME

- Check the signal from the input source. The amplifiers are designed to operate at an input voltage of 0.775V. If the intended signal source is below this a lower output volume will result. Raise the signal level from the source.
- On bigger stages if volume is still insufficient, move the speaker to a better position. Closer or to the side (side-fill) may improve it. Angling the speaker may also help using some small tilting speaker stands. For all but the biggest stages though, the FR cabs should be able to handle it.

(4) OUTPUT IS DISTORTED OR THIN SOUNDING

- Check input source for clipping. Reduce source volume if necessary and increase amp module volume.
- Check leads for correct wiring.
- If a driver issue is suspected, refer to Matrix support personnel.

(5) OUTPUT IS TOO BASSY OR TOO THIN

- Check the correct DSP setting is selected as at higher volumes the effects can be enhanced.
- Check that patches have been “tweaked” at gig or rehearsal volumes. This could be a result of the “Fletcher-Munson Effect” or equal loudness curve to give it its new name. This basically means that at higher volumes, you’ll need to reduce the high and low frequencies to avoid sounding “scooped”.
- Check cab sims are enabled in your patch. If not you’ll get a very thin buzzy sound, the “bee in a biscuit tin” syndrome of the full amp signal being reproduced by a full range speaker.

For many other problems a simple troubleshooting process can help before contacting Matrix Support. Double check all leads and try new ones that you know work. If a driver problem is suspected, try some full range music through the input as this will often point out more dramatically where a problem lies.

If any of these, or other symptoms persist, please contact your dealer or alternatively email us at support@matrixamplification.com for help, advice and service. We’re here to help and we aim to get back to people within 24 hours.

CARE & MAINTENANCE:

Your Matrix FR series active cab should give you years of trouble free service provided you take care of it. Any cleaning should be done with a damp (not wet) lint free cloth and if needs be, the fins can be cleared of any dust or debris using either a small brush or compressed air (the kind suitable for cleaning computer devices). Do not use any abrasive cleaning products as these may damage the powder coating or printing.

If access to the speaker is needed, then the front grille may be removed by inserting a small allen wrench or sililar into the leather pull tabs on the bottom of the grille. The grille is velcroed on but is tight to avoid vibration at high sound pressure levels so some light force may be needed. Do a little on both tabs to loosen and then it should pull out.

FULL 2 YEAR WARRANTY:

Summary

Matrix Elements warrants this FR series active speaker for a period of 2 years from date of purchase to be free of defects in materials and workmanship under normal conditions and usage. This warranty is transferable but original proof of purchase date is needed if any claim is to be made on the warranty. Any products found to be defective within the applicable period will be repaired or replaced at the discretion of Matrix Amplification Inc/Ltd. without any charge provided that;

- (1) the product was not misused, abused, improperly maintained, or repaired by any person not authorized by Matrix Amplification Inc/Ltd;
- (2) the failure resulted from a defect in material or workmanship and was not damaged due to use other than its intended use;
- (3) the product was not used under abnormal, excessive, or unusual operating conditions or suffered abuse;
- (4) the product is promptly delivered prepaid to the original place of purchase or to manufacturer together with proof of purchase within the applicable period.

Limitations and exclusions

We will not warrant items which we deem to have been misused, damaged due to incorrect connection, neglected or items exhibiting normal wear and tear. We will not warrant consequential damage to other products resulting from the incorrect operation or misuse of the item.

Warranty Claims

Contact your dealer (if applicable) in the case of a warranty claim or alternatively contact us if purchased direct on:
support@matrixamplification.com

Your statutory rights are not affected

CONTACT US:

Matrix is a company that prides itself on customer feedback and interaction. We like to hear from our customers with any suggestions they have to help us continually improve our service. You are very welcome to share your experience with us by contacting:
support@matrixamplification.com

Alternatively you can call us.

(+44) (0)845 108 5449 within the UK (calls charged at local rate from landline) 9.30am - 5pm Mon-Fri (GMT)

or customers within the US can call: (805) 766 8556 9am - 5pm Mon-Fri (PDT/PST)

We also love sharing our players experience and promoting them where we can. Any pictures, videos featuring Matrix products or a good old fashioned thumbs up can be posted on our social media.

<https://www.facebook.com/MatrixAmplification>

We're also around to offer any help or advice as best we can if you run into any problems or have a question, no matter how trivial. We aim to get back to you within 24 hours (during the week) but bear in mind our main support office is in the UK and there may be a time difference. Again, contact us at:
support@matrixamplification.com

Thank you from the Matrix Team!



TECHNICAL SPECIFICATIONS:

GT800

GT1600

Number of Channels:	1
Watts Output	300
Supply Voltage:	230V +/- 15% or 110V +/- 15%
Internally Selectable Alternative Voltage:	
Average Supply Current, Full Load:	5A (10A @ 110v)
Mains Connector:	10A IEC
Frequency Response (Speaker):	50–20,000 Hz +/- 2db
Signal to Noise Ratio (ref. Full power 1kHz):	96 dB
THD (1kHz, full power):	0.06%
THD (50Hz - 20kHz, full power):	<0.1%
Slew Rate:	50 V/ μ s
Damping Factor (ref. 8R, 100Hz):	>300
Cooling:	Passive
Input Level Sensitivity:	0.775v / 0 dBu
Dimensions (dwh):	20.5" x 12" x 12" or 52cm x 30cm x30cm (FR10) 20.5" x 12" x 17.5" or 52cm x 30cm x 45cm (FR12)
Weight:	9.7 Kg or 21.2lbs (FR10) 13 Kg or 28.9lbs (FR12)

CE Declaration:

Issuers Name and Address:

Andrew Hunt MATRIX AMPLIFICATION LIMITED 32 Dewsland Park Road,
Newport, South Wales. United Kingdom. NP20 4EF

Products:

Matrix Elements FR10 NL, FR12 NL

Equipment Type:

Commercial Audio Powered Speaker

Safety Standard:

AMD1: 2005 and IEC 60065: 2001 7th Ed. EMC Standards: EN 61000-4-2:2001 EN 61000-4-3:2006 EN 61000-4-4:2007 EN 61000-4-5:2006 EN 61000-4-6:2006 EN 61000-4-11:2001 EN 55103-1:1997 EN 55103-1:1997 EN 55103-2:1997 EN 61000-3-3:2008 EN 61000-3-2:2005 and AMD1: 2008 EN 55022:2006

Safety Requirements - Audio Video and Similar Electronic Apparatus. Electrostatic Discharge Immunity (Environment E2-Criteria B, 4k V Contact, 8k V Air Discharge). Radiated, Radio-Frequency, Electromagnetic Immunity (Environment E2, criteria A). Electrical Fast Transient/Burst Immunity (Criteria B). Surge Immunity (Criteria B). Immunity to Conducted Disturbances Induced by Radio-Frequency Fields (Criteria A). Voltage Dips, Short Interruptions and Voltage Variation. Electromagnetic Compatibility - Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 1: Emissions. Magnetic Field Emissions-Annex A @ 10 cm and 20 cm. Electromagnetic Compatibility - Product Family Standard for Audio, Video, Audio-Visual and Entertainment Lighting Control Apparatus for Professional Use, Part 2: Immunity. Limits for Harmonic Current Emissions (equipment input current less than or equal to 16 A per phase). Limits and Methods of Measurement of Radio Disturbance Characteristics of ITE: Radiated, Class B Limits; Conducted, Class A. Limitation of Voltage Fluctuations and Flicker in Low-Voltage Supply Systems Rated Current less than or equal to 16A. I certify that the product identified above conforms to the requirements of the EMC Council Directive 89/336/EEC as amended by 92/31/EEC, and the Low Voltage Directive 73/23/EEC as amended by 93/68/EEC.

Signature:



Andrew Hunt, Managing Director. Date of Issue: 01/09/2015

GT-SERIES AMPLIFIERS

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WITHOUT THE HEAVY WEIGHT

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