

KAM



KAM **KXR** POWER AMPS

professional power amplifiers

INSTRUCTION MANUAL

www.kam.co.uk



OVERVIEW

Congratulations on your choice of new amplifier... cool isn't it? We are certainly very proud of it. We believe in giving you products with the features and performance you want at a price you can afford and the KXR Amplifier range is living proof of our commitment to meeting that goal. We know you're itching to get it fired up but bear with us and we'll run through a few things you should know that will help you get the best from your new amplifier and ensure that it lasts as long as you want it to.

There are six models in the KXR Amplifier range

KXR150	150W RMS amplifier
KXR300	300W RMS amplifier
KXR600	600W RMS amplifier
KXR1000	1000W RMS amplifier
KXR1500	1500W RMS amplifier
KXR2000	2000W RMS amplifier

Although there are six different models in the range and some of them do vary slightly in input configuration, the main difference between each model is their maximum power output. This means that the basic principles of amplifier connection and usage are true for all six models. Below we outline basic operation procedures and tell you about any differences that are particular to specific models.

SAFETY NOTE

ALWAYS turn off the mains power before making any connections to KXR amplifiers. Large PA amplifiers are capable of sending potentially lethal amounts of electricity to their outputs so you should always ensure that any amplifier has its power turned off (and preferably disconnected) before making connections. **NEVER** attempt to connect a microphone to the speaker outputs of an amplifier.

CONNECTING SPEAKERS...

WHICH SPEAKERS ARE RIGHT FOR YOUR AMPLIFIER?

Passive only

Your KXR Amplifier is designed to be used in conjunction with a set of passive speakers. This means that they're good for use with most (providing you follow the rating and connection procedures below) speaker types that don't have built in amplification; in the context of the Kam equipment range this means your KXR amplifier is ideal for use with our IMS Pro10, IMS Pro12 & IMS Pro15 speakers (or our standard IMS or Z Series speakers) but it is not needed with our IMS Pro12A or IMS Pro15A 'active' speakers because they already have built in amplification.

Power & Impedance

It is important to ensure that you match the power that your speakers can handle with the power that your amplifier can produce.

Speaker Rating

A set of speakers has two stated ratings.

They should have a maximum power handling capacity that is measured in Watts (EG 300W). This tells you how much power the speaker can handle from the amplifier before the sound distorts and damage begins to occur.

A speaker will also have what we call an 'Impedance' rating. Impedance is a term we use to define the amount of resistance your speaker presents to your amplifier and it is measured in 'Ohms'. Most speakers have an Impedance rating of 8 Ohms but ratings of 4 Ohms are not uncommon and sometimes

you may encounter 16 Ohm. A speaker that is rated at 8 Ohm presents a larger amount of resistance to the amplifier than one that is rated at 4 Ohm. As you can see from the chart below this means that a particular amplifier will deliver greater power to a pair of 4 Ohm speakers than it would to a pair of 8 Ohm speakers.

KXR amplifiers require speakers with a minimum Impedance rating of 4 Ohm. They will work just as well with speakers rated at 8 Ohm but the volume achieved from your speakers will be different for 4 and 8 Ohm speakers. The chart below tells you the power output ratings for KXR amplifiers at both 4 and 8 Ohms.

	4 Ohm speaker	8 Ohm speaker
KXR150	75W RMS per channel	50W RMS per channel
KXR300	150W RMS per channel	100W RMS per channel
KXR600	300W RMS per channel	200W RMS per channel
KXR1000	500W RMS per channel	340W RMS per channel
KXR1500	750W RMS per channel	450W RMS per channel
KXR2000	1000W RMS per channel	670W RMS per channel

CONNECTING YOUR SPEAKERS TO YOUR AMPLIFIER...

- **Always ensure that both volume controls on your KXR amplifier are turned to zero and that it's mains power is switched off when making connections.**
- **Using an appropriate cable (if in doubt refer to the 'Connection types' section below) connect the left speaker to channel A and the right speaker to channel B.**
- **Please read the rest of this manual before turning on the power or adjusting the volume controls.**

CONNECTION TYPES

Speakon

All KXR amplifiers feature a pair of Speakon speaker output sockets. Speakon is a standard connection type that is only used for connecting speakers to amplifiers. You cannot use Speakon connections for any other type of audio signal connection.

The Speakon connections on your KXR amplifier are internally wired with a standard +1/-1 configuration.

This means they are designed to be used with two pin Speakon cables. This wiring configuration matches all Speakon equipped Kam speakers. If you wish to use your KXR amplifier with speakers which use a +2/-2 configuration you may need to construct a special cable. You will find details on this and how to construct a standard Speakon cable online at www.kam.co.uk/tuition.

Binding Posts

Although Speakon is a safer and more reliable form of speaker connection and we highly recommend using Speakon if you can... for your convenience you will find that all models of KXR amplifier also feature 'Binding Post' speaker output connectors. Binding Posts are threaded terminals designed to accommodate bare wires. For secure connection pass the bare cable end through the hole, wrap the cable around the post and firmly screw down the cap. It is important to ensure that no stray bare cable ends connect the two posts. One post is red and should be used for positive and the other is black and should be used for negative connections.

BRIDGE MODE OPERATION

The following KXR amplifiers feature Bridge Mode Operation; **KXR600, KXR1000, KXR1500 & KXR2000.**

Bridge mode is a professional feature that is actually fairly complex. It is a means of devoting the entire power of your amplifier to a single audio input. But you cannot simply connect a single speaker to one channel output and use it... it requires a very unusual wiring configuration and very solid understanding of speaker impedance and power handling. Unless you really know what you are doing with it, don't use it.

We'd better explain... in bite-sized pieces;

- Bridge mode devotes the entire power output capacity of the amp to the Channel A input.
- That may sound simple but the way in which the amplifier achieves this is not so simple.
- If you understand how a balanced audio connection works you'll know that it provides three wires within an audio cable; one of them is simply an earth, the other two each carry half of the audio signal – one carries the positive half of the signal and the other carries the negative half.
- When you place an amplifier in bridge mode, it uses channel A to amplify the positive half of the signal and uses channel B to amplify the negative half of the signal.
- **So the first thing to understand about bridge mode is that you can't use it with an Unbalanced audio input.**
- This also has a dramatic effect on how you connect your speakers to the amplifier.
- With a pair of Balanced audio connections in normal operation, the two polarities of the signal (within each individual Balanced connection) are amplified within each channel of the amp (with the two channels of the amplifier operating in parallel)... so both channels of the amplifier accommodate a connection each and are basically doing the same thing at the same time.
- In bridge mode, because each side of the amplifier is now being fed by one input but dealing with opposite polarities of the audio signal, they are no longer doing the same thing at the same time... when channel A is 'sucking', channel B will be 'blowing'.
- This means that if you leave a pair of speakers connected in the normal manner, one speaker will only be getting the positive half whilst the other speaker will only be getting the negative half of the audio signal.
- What is worse is that the amplified signals are only delivered to just one (the positive) terminal of each output channel of the amplifier (sorry we did say it wasn't simple).
- The amplifier will continue to attempt to drive the speakers just as hard but the entire thing will be messed up and sound dreadful.
- The answer is to connect a single speaker across both channels of the amplifier.
- This means that with **KXR amplifiers you cannot use the Speakon outputs in bridge mode.**
- With KXR amplifiers you need to **use the Binding Posts to connect a single speaker.**
- **Connect the positive wire of your speaker cable to the positive Binding Post of channel A.**
- **Connect the negative wire of your speaker cable to the positive Binding Post of channel B.**

The problems don't end there either. You need to be aware that bridge mode potentially delivers considerably more power to your speakers. In much the same way that attempting to use an over powered amplifier to drive an under sized speaker is obviously a recipe for trouble... so is trying to use bridge mode to coax more volume from low impedance speakers. Bridge mode can be useful for using an amplifier to drive a speaker with a higher impedance than usual (perhaps driving a single 16 Ohm speaker with an amplifier you might use to drive a pair of 8 Ohm speakers). But this has its own problems because a higher impedance speaker will actually demand more power from your amplifier (even at lower volumes) than it is used to delivering to a lower impedance speaker... and that can over strain your amplifier.

Bridge Mode is activated by pressing the recessed switch (you will need a small screwdriver or other similar implement to reach it) marked 'Bridge' which is located near the volume controls on the front panel. When activated the accompanying LED beside the switch will illuminate.

CONNECTING MIXERS ETC...

Which equipment is right for your amplifier?

All audio input connections on all KXR Amplifiers operate strictly at Line Level. This means that, providing you have an appropriate cable, **you can connect any Line Level audio device to the input connections on the back of your amp**'. For most circumstances this means using a mixer... this can be a DJ mixer or a mixing console of the type used to combine various instruments when mixing a live band etc. In some circumstances you might wish to connect a CD, MP3, DAT, Cassette Player etc or any other line level device directly to the Line Input connections and this should work quite safely... but it is more common to use a mixer of some sort to enable you to combine several sound sources and to provide additional overall volume control. **Your amplifier IS NOT designed to accept input connections directly from microphones.** If you wish to use a microphone you'll need to connect the microphone to a mixer (so that the mixer can convert the Mic Level signal to a Line Level signal) and then connect the mixer to your amp'.

Connection types

Balanced XLR. All models of KXR amplifier feature line level balanced XLR audio input sockets. If your equipment features appropriate balanced XLR audio outputs and you have an appropriate cable we recommend using this connection type.

Unbalanced Jack. All KXR amplifiers also feature unbalanced Jack input sockets.

Line Level RCA Phono. Two models of KXR amplifier feature line level RCA Phono input connections; the KXR150 & KXR300. This is simply because these two models of amplifier provide a power output level that is suited to home use or for performances in bars etc. RCA Phono is a domestic audio connection type. It is important to note that these are Line Level RCA Phono connections... NOT 'Phono' Level RCA Phono connections. This means you cannot connect the output from a standard turntable (unless your turntable has a built in pre-amplifier and specified line level RCA Phono outputs). You must connect a standard turntable to a DJ mixer (or other appropriate pre-amplifier) so that the mixer can boost the 'Phono Level' turntable output signal to the 'Line Level' that is right for your amplifier.

PROCEDURE

- **Always ensure that the volume controls on your KXR amplifier are turned to zero and that it's mains power is switched off when making connections.**
- **If you look at the output connections on your mixer etc you should see that there are two sockets, one marked 'left' or 'L' and the other marked 'right' or 'R'.**
- **Almost all mixers will also colour code all of the audio input and output connections using a simple rule; Red = Right, White = Left. If you purchase a commercially produced audio cable you will often find that the connectors are colour coded to help you follow the rule.**
- **Use an appropriate audio cable to connect the left channel of the output from your mixer to the input marked channel A on your amplifier... and connect the right channel of the output from your mixer to the input marked B on your amplifier.**
- **If you have already connected up your speakers you are ready to move on to turning on and using your equipment.**

ALWAYS TURN ON YOUR EQUIPMENT IN THE FOLLOWING ORDER;

1. **Turntables, CD players etc – but don't start playing any music yet**
2. **DJ mixer (if you use one) – but make sure that the output volume is at zero**
3. **KXR amplifier**

NOW YOU ARE READY TO PLAY SOME MUSIC;

1. Put on a record, slide in a CD etc and start it playing
 2. If you use a mixer, use it to set up optimum input and output signal levels – the level meter should be peaking at around zero dB
 3. Slowly turn up the volume controls on your KXR amplifier – if you have used the right cables and made all of your connections correctly you should clearly hear music.
 4. If you do not hear any music or it sounds all wrong, even at low volumes, check all your connections and cables.
 5. When the music reaches the desired listening level, stop turning up the amplifiers volume controls.
 6. KXR amplifiers are designed to deliver professional quality sound reproduction and plenty of power but it is possible to overload them. All KXR amplifiers feature '**Signal Clip Indicator**' LEDs on the front panel just above the volume controls. These LEDs illuminate when the incoming signal level exceeds the safe operating level. It is acceptable for these LEDs to illuminate occasionally during normal usage, however the gain structure of all KXR amplifiers has been carefully set so that these LEDs serve as a genuine indication of overload... so if they come on frequently you are in danger of damaging your amplifier and probably your speakers too.
- **Sending excessive signals from your external equipment to your KXR amplifier will cause a distorted sound and can damage your amplifier and/or speakers. Kam products which have been damaged in this way are not covered by your guarantee.**
 - **Your KXR amplifier is guaranteed against manufacturing defects but it is not guaranteed against accidental user damage or normal wear and tear.**

Ground Lift Switch

When using Unbalanced audio input connections you may, in some circumstances experience problems with persistent hum. This can be caused by an 'earth/ground loop'. To help combat this all KXR amplifiers have a 'ground lift' switch on the rear panel. This switch disengages the ground (aka earth) connection from the mains power to the amplifier. The problem is rare with correctly configured Balanced audio connections.

Thermal Protection Relay

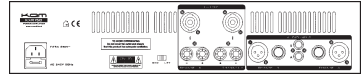
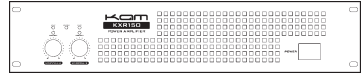
All KXR amplifiers feature a thermally efficient central heat sink design and forced fan cooling. They are designed to operate in the kind of relatively high environmental temperatures found in some venues and we feel that they perform extremely well in such hostile conditions. However, because extremely high environmental temperatures are always a hazard to high power amplifiers, all KXR amplifiers also feature a Thermal Protection Relay. If the amplifier becomes too hot, it will temporarily go into a 'standby' mode where the audio circuitry (but not the fans!) is switched off. This gives the circuitry time to cool down. If this happens the amber LEDs marked 'Protect' (found on the front panel above the volume controls) will illuminate. If this happens you should turn the volume controls to zero immediately and wait. When the Protect LEDs stop being illuminated you can gradually return the volume controls to the desired listening level. Under such circumstances it is advisable to return the volume controls to a slightly lower listening level than that set prior to the engagement of the Thermal Protection Relay. The more power output you demand from your amplifier, the higher the internal operating temperature is liable to be... so a lower listening level will decrease the chances of the Relay engaging once more.

You will find loads more advice and information about setting up Kam audio equipment within the Tuition area at www.kam.co.uk.

Thank you for reading these guidelines and enjoy your Kam KXR amplifier!

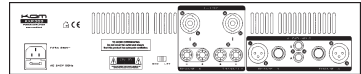
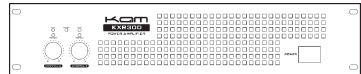
KXR150 power amplifier

Amplifier power output	75W RMS per channel @ 4 Ohms 50W RMS per channel @ 8 Ohms
Input connections	Balanced XLR, unbalanced jack & RCA phono
Output connections	Speakon & binding post
Minimum impedance	4 Ohms
Frequency response	20Hz - 30KHz (± 1.5 dB)
S/N Ratio	85dB
THD	0.05%
Dimensions	316 x 88 x 481mm
Weight	6.5Kg



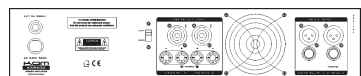
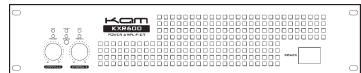
KXR300 power amplifier

Amplifier power output	150W RMS per channel @ 4 Ohms 100W RMS per channel @ 8 Ohms
Input connections	Balanced XLR, unbalanced jack & RCA phono
Output connections	Speakon & binding post
Minimum impedance	4 Ohms
Frequency response	20Hz - 30KHz (± 1.5 dB)
S/N Ratio	90dB
THD	0.05%
Dimensions	316 x 88 x 481mm
Weight	7Kg



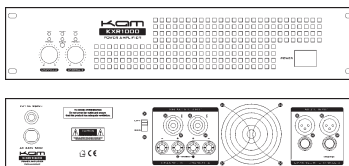
KXR600 power amplifier

Amplifier power output	300W RMS per channel @ 4 Ohms 200W RMS per channel @ 8 Ohms
Input connections	Balanced XLR & unbalanced jack
Output connections	Speakon & binding post
Minimum impedance	4 Ohms
Frequency response	20Hz - 30KHz (± 1.5 dB)
S/N Ratio	84dB
THD	0.1%
Dimensions	341 x 88 x 481mm
Weight	10Kg



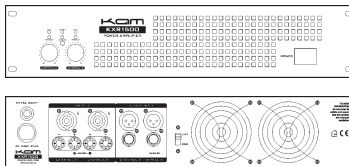
KXR1000 power amplifier

Amplifier power output	500W RMS per channel @ 4 Ohms 340W RMS per channel @ 8 Ohms
Input connections	Balanced XLR & unbalanced jack
Output connections	Speakon & binding post
Minimum impedance	4 Ohms
Frequency response	20Hz - 30KHz (± 1.5 dB)
S/N Ratio	84dB
THD	0.1%
Dimensions	341 x 88 x 481mm
Weight	12Kg



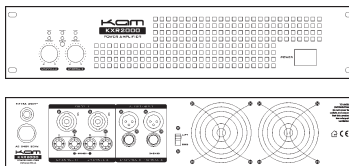
KXR1500 power amplifier

Amplifier power output	750W RMS per channel @ 4 Ohms 450W RMS per channel @ 8 Ohms
Input connections	Balanced XLR & unbalanced jack
Output connections	Speakon & binding post
Minimum impedance	4 Ohms
Frequency response	20Hz - 30KHz (± 1.5 dB)
S/N Ratio	90dB
THD	0.1%
Dimensions	416 x 88 x 481mm
Weight	18Kg



KXR2000 power amplifier

Amplifier power output	1000W RMS per channel @ 4 Ohms 670W RMS per channel @ 8 Ohms
Input connections	Balanced XLR & unbalanced jack
Output connections	Speakon & binding post
Minimum impedance	4 Ohms
Frequency response	20Hz - 30KHz (± 1.5 dB)
S/N Ratio	90dB
THD	0.1%
Dimensions	416 x 88 x 481mm
Weight	18.5Kg



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