



LINN

ISOBARIK AKTIV CROSSOVER

OWNERS MANUAL

I**NTRODUCTION** Thank you for buying the Linn AKTIV Crossover. The AKTIV is the culmination of many years of research by Linn. It has long been recognised that active crossover systems can improve loudspeaker performance. This is the first electronic crossover to realise the full potential of an active loudspeaker system.

Active and Passive: With a conventional passive crossover the signal from the amplifier is divided into frequency bands (bass, mid and treble) by a passive circuit located within the speaker cabinet. It is not mains powered, hence the description 'passive'.

By contrast, an active system separates the sound into separate bass, mid-range and high frequency signals before amplification. Then, three amplifiers, not one, send these signals directly to the speaker's respective drive units.

The advantages are better control of the drive units and more precise separation of the audio frequencies.

An active crossover allows a degree of control of the signals and the drive units to a precision not practical or possible in a passive crossover. For example, the response of a passive crossover is affected by the impedance of the drive unit to which it is connected, however the impedance of a drive unit varies widely with frequency and drive level. In an active crossover, because the drive units are driven from individual power amplifiers, any change in their input impedances cannot affect the crossover responses at all.

The AKTIV also includes compensation for the amplitude, phase and time responses of the Isobarik, and has been designed and manufactured with precision for the highest level of performance.

OPERATION

It is recommended that the crossover is turned on first, followed by the power amplifiers individually.

The crossover will perform best after about half an hour of warm-up. It will run slightly warm to the touch. The running temperature is independent of programme material or level.

As with all electronic equipment do not expose the AKTIV to strong direct, or radiated, heat.

GENERAL INFORMATION & MAINTENANCE

The crossover can be left switched on continuously if required. Its power consumption is very low. We recommend that you switch off the power amplifiers when not in use.

The case of the AKTIV can be wiped with a damp cloth to remove dust and finger marks.

The only maintenance suggested is occasionally to unplug then re-connect all the connectors. This wiping action cleans the contacts.

FAULT FINDING

The most likely time for faults or errors to occur is during installation and these will normally be rectified by the dealer. Faults can be isolated by determining which channel (left or right) and which frequency band is wrong. Remember that the LK2 power amplifiers have a protection trip, which will shut down an overloaded channel. To reset the amplifier, switch the power off for five minutes.

If a power indicator light is not visible on the AKTIV check: the mains cable is plugged into the back securely, the mains fuse in the plug (if fitted) and the mains fuse in the power inlet on the back of the AKTIV are intact.

To check the mains fuse in the power inlet remove the power cord then using a small flat blade screwdriver flick the fuse holder drawer out of the power inlet unit. Check the fuse. If it is blown, replace it with an identical one.

The importance of double checking all signal and speaker connections before switching on cannot be over emphasised.

INSTALLATION

As installation is the responsibility of your dealer, the Installation section appears at the end of this manual under the Dealers section.

We recommend that should you require to relocate or transport your Aktiv system, you contact the dealer and arrange for him to disassemble and reconnect the system.

Contents Information:

The AKTIV is supplied with the following:

- 1 AKTIV Crossover
- 6 Interconnect Leads
- 1 Mains Lead
- 6 each 6.2K, 3.3K, 1.6K, 750ohm, 330ohm, 130ohm, 0.25W 1% metal film resistors
- 1 Owner's manual and registration card Labels for interconnecting cables

The Linn 'AKTIV' system comprises:

Sources, e.g. disc, tuner, tape, CD etc.

A Linn LK1 preamplifier

A Linn 'AKTIV' Isobarik crossover

3 Linn LK2 power amplifiers

A pair of Linn Isobarik loudspeakers

Interconnect cables, power cables and speaker cables

GUARANTEE & SERVICE

The AKTIV is guaranteed under the conditions that apply in the country of purchase. In addition to any statutory rights the customer may have, we undertake to replace any parts that have failed due to faulty manufacture.

Keep a copy of the sales receipt, as this will establish the purchase date. Refer all enquiries to authorised dealers only.

OWNER REGISTRATION

Please return the enclosed registration form to Linn Products if you are resident in the UK, or to your local distributor if you are resident outside the UK. We will add your name to our mailing list and send you regular news about Linn and hi-fi developments in general.

ELECTRONIC SPECIFICATIONS

Input impedance:	2000 ohms
Maximum source impedance:	600 ohms
Output impedance:	200 ohms
Minimum load impedance:	600 ohms
Nominal input level:	1 Volt rms
Gain on each band:	adjustable from 0dB to +12dB in 0.25dB steps
Distortion:	less than 0.1%
Connections:	3 pin male XLR
	Pin 1: 0 Volts
	Pin 2: Left
	Pin 3: Right

ACOUSTIC SPECIFICATIONS

(When used with Linn Isobarik loudspeakers)

Crossover frequencies:	bass to middle 200Hz second order middle to high 2700Hz fourth order
Achievable near field frequency response:	50Hz to 20kHz +/- 2dB
Achievable near field phase response linearity:	50Hz to 20kHz +/- 45 degrees

Note: when used with Linn LK1 preamp all speaker phases should be reversed at the power amp to maintain absolute phase due to phase inversion in the LK1.

GENERAL

Mains supply:	100V, 115V, 200V, 220V, 240V – 50/60Hz (one voltage per mains module)
Power Consumption:	20 Watts
Dimensions:	320mm W x 265mm D x 75mm H
Weight:	4kg

DEALER INFORMATION

INSTALLATION

Note to Dealer: Please read the following instructions thoroughly before attempting Installation:

Installation includes four main areas:

1. Physical Positioning (of the Aktiv Crossover, preamp and power amplifier)
2. Electrical Supplies
3. Signal interconnections
4. Adjustment

1. Physical Positioning

The dominant factor in positioning the crossover and power amplifiers is the proximity of the power amplifiers to a turntable and disc preamplifier. Even though low field toroidal transformers are used in the power amplifiers the hum field from three substantial power amplifiers can cause problems. In general the power amplifiers will have to be positioned further away from the turntable and preamplifier than in a passive system. At least 1 metre is necessary between pre and power amplifiers. The crossover is not as susceptible to interference from transformer hum fields and can be positioned beside, but not on top, of the power amplifiers. Because there are no controls (other than power switches) on the crossover and power amplifiers it may be convenient in some installations to position them remote from the sources and preamplifier. The Linn LK1 preamplifier is capable of driving up to 10 metres of Linn interconnect cable. The reduction in speaker cable length will make for a tidier installation.

The heat generated by the crossover and power amplifiers is the next important factor. Three Linn LK2/75 power amplifiers working into Isobariks can develop over 800 Watts of output power and in doing so will generate at least the same heat again. Even though music does not cause this amount of continuous power it is essential to allow adequate ventilation for the power amplifiers.

2. Electrical Supplies

The position of the electrical supplies obviously depends on the physical layout of the system. Electrical safety is essential. If enough power outlets are not available DO NOT wire multiple cables into one plug. Either fit outlets to the wall where necessary or make up a high quality extension with enough outlets.

It is recommended, if using mains extension units, that the power amplifiers are all plugged into the same one (if enough sockets are available) and that the preamp, crossover and sources, are plugged into a separate one.

If all the power amplifiers are run off an extension from one mains outlet it is good practice to switch the power amplifiers on one at a time from their front panels rather than all at once at the power outlet.

3. Signal Interconnections

Take time to label all cables prior to installation. This will save time and potential errors if the system is ever moved or disconnected. We provide labels to identify each cable.

The XLR leads supplied with the AKTIV are suitable for installations where the crossover is up to 1.2 metres away from the preamplifier. The leads from the crossover to the power amplifiers allow for the crossover to be within one metre of the power amplifiers. If you wish to have the crossover remote from the preamplifier, your dealer/distributor can supply the necessary length of cable. The loudspeakers should be connected to the power amplifiers using Linn K20 cable.

When connecting the system to the LK2 power amplifiers we recommend that you connect LEFT BASS and RIGHT MIDDLE to one LK2, LEFT MIDDLE and RIGHT BASS to the second LK2 and LEFT and RIGHT TREBLE to the third LK2.

Three LK2s can be stacked on top of each other but ensure there is adequate ventilation. The treble amplifier should be on top of the stack. Powering up for the first time should be done after double checking all connections especially speaker connection phase.

IMPORTANT:

1. When using a Linn LK1 preamp the +ve of the power amplifier output should be connected to the -ve speaker terminal, and the -ve of the amplifier to the +ve of the speaker. This is because the LK1 inverts signal phase to the main output.
2. The AKTIV contains de-thump circuitry to protect your speakers but a slight noise may be heard on power down.
3. First, play music through the system at very low level and listen to each drive unit, ensuring that appropriate sounds are coming out of each unit.
4. Check for hum in the system. If there is a problem, this can be cured by repositioning either the turntable, preamplifier or crossover. If hum persists, check earthing.

4. Adjustment

The AKTIV Isobarik system is preset at the factory for an acoustically correct on-axis frequency response, and we recommend that you listen to the AKTIV in this configuration for some time. In general you will find that no adjustment will be necessary on the mid-range or treble. The bass level may require adjustment to suit some rooms. (See following section for full details).

LEVEL ADJUSTMENTS

Have the crossover in a position that makes for easy access from the top. This can be a temporary position, but ensure there is no hum.

Remove the outer sleeve (four socket head screws underneath).

Looking from the front of the crossover you will see the adjust board containing 6 banks of colour coded slide switches.

There are 12 solder terminals arranged in vertical pairs to the outside of the switches. These contain the fixed resistors for the preset response. All the switches should be OFF.

The switches are arranged in a binary sequence such that selecting switch number (X+1) gives twice the decibel gain step that switch (X) gives. The switches affect only the level of signals fed to the corresponding drivers and do not affect the crossover frequencies. If the bass setting you want is with switches 4 and 5 on, then solder a 750ohm resistor in parallel with a 300ohm resistor across the appropriate solder tags (see table). Turn the switches off and replace the cover.

The steps available are:

Switch Colour	Switch Number	dB Step Increase	Resistor Value	Colour Code
	0 (all off)	0		
Brown	1	0.25	6.2Kohm	<i>BlueRedRed</i>
Red	2	0.5	3.3Kohm	<i>OrangeOrangeRed</i>
Orange	3	1	1.6Kohm	<i>BrownBlueRed</i>
Yellow	4	2	750ohm	<i>PurpleGreenBrown</i>
Green	5	4	330ohm	<i>OrangeOrangeBrown</i>
Blue	6	8	130ohm	<i>BrownOrangeBrown</i>
Purple	7	not used		
Grey	8	not used		

The gain selected is the decibel sum of all the switches in a pack, which are turned on.

The factory-preset values are:

BASS: 330 ohm resistor.
This is equivalent to switch 5 ON or +4dB

MIDDLE: no resistors fitted.
This is equivalent to all switches off or 0dB.

TREBLE: 330 ohm resistor.
This is equivalent to switch 5 ON or + 4dB.

THIS SETTING WILL GIVE A FLAT FREQUENCY RESPONSE IN MOST ROOMS

First remove the preset resistors relating to the bass switches. This requires a soldering iron and a small pair of pliers to hold the resistors.

BE VERY CAREFUL NOT TO SPLASH SOLDER ON TO THE CIRCUIT BOARDS (cover the board with something to be safe).

To increase bass level by 1dB requires a gain setting of +5dB. Set switches 3 and 5 ON.

To reduce bass-level by 2dB requires a gain setting of +2dB. Set switch 4 ON.

Normally adjust both left and right switches to identical settings. It is probably best to start with 1dB steps, gradually adjusting down to 0.25dB steps if necessary.

Listen at new setting using a selection of music before soldering in the resistors, since if you decide to alter the settings it will be necessary to remove them from the solder tags and repeat the whole process.

Once you are happy, select the correct value of resistors (see table), solder them in place across the solder terminals and set all switches to 0.