



# LINN AKTIV MODULES

O W N E R S   M A N U A L

## **Year 2000 Compliance**

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## Important safety information

Explanation of symbols used in this manual and on the product:



This symbol is intended to alert the user to the presence of uninsulated dangerous voltages within the enclosure of sufficient magnitude to cause electric shock.



This symbol is intended to alert the user to the presence of important maintenance and servicing information in the instruction and service manuals.

### CAUTION

TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE THE COVER.  
NO USER SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

WARNING: SHOCK HAZARD. DO NOT OPEN. *AVIS: RISQUE DE CHOC ELECTRIQUE. NE PAS OUVRIR.*

CAUTION: REPLACE FUSE WITH SAME TYPE AND RATING.  
*ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE.*

DISCONNECT SUPPLY CORD BEFORE CHANGING FUSE.  
*ATTENTION: DEBRANCHER AVANT DE REMPLACER LE FUSIBLE.*

### WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

### MAINS PLUGS

This appliance is supplied with a non-rewireable mains plug for the intended country.

Replacement mains leads can be obtained from your Linn retailer.  
Should you need to change the plug please dispose of it carefully.

A plug with bared conductors is dangerous if engaged in a live socket.

The Brown wire must be connected to the Live (Line) supply pin.

The Blue wire must be connected to the Neutral supply pin.

The Green/Yellow wire must be connected to the Earth (Ground) supply pin.

Please contact your retailer or a competent electrician if you are in any doubt.

## General safety instructions

1. Read instructions. Read the safety and operating instructions before operating the appliance.
2. Retain instructions. Retain the safety and operating instructions for future reference.
3. Heed warnings. Observe all warnings on the appliance and in the operating instructions.
4. Follow instructions. Follow all operating and use instructions.
5. Water and moisture. Do not use the appliance near water, for example near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool and the like.
6. Carts and stands. Use only with a cart or stand that is recommended by the manufacturer.
- 6a. An appliance and cart combination should be used with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
7. Wall or ceiling mounting. Mount to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation. Site the appliance so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat. Site the appliance away from heat sources such as radiators, heaters, stoves, or other appliances (including amplifiers) that produce heat.
10. Power sources. Connect the appliance to a power supply only of the type described in the operating instructions or marked on the appliance.
11. Grounding or polarisation. Do not defeat the precautions taken to ground or polarise the supply to the appliance.
12. Power cord protection. Route power cords so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, power sockets, and at the point where they exit from the appliance.
13. Protective attachment plug. As a safety feature the product is equipped with an attachment plug containing overload protection. See the instruction manual about resetting or replacing the plug. Should the plug need replacing ensure that a replacement is used which has the same overload protection as the original.
14. Cleaning. The product should be cleaned only as recommended by the manufacturer.
15. Power lines. An outdoor antenna should be located away from power lines.
16. Outdoor antenna grounding. If an outdoor antenna is connected to the tuner/receiver ensure that the antenna system is grounded to provide some protection against voltage surges and static build up.  
In the USA see article 810 of the National Electrical Code ANSI/NFPA 70 concerning installation requirements.
17. Non-use periods. Unplug the power cord from the outlet if the product will be unused for a long period of time.
18. Objects and liquid entry. Take care not to let objects or liquids fall into the product.
19. Damage requiring service. The product should be serviced by qualified personnel if:
  - a) The power cord or plug has been damaged.
  - b) Objects or liquid have fallen into the product.
  - c) The product has been exposed to rain.
  - d) The product does not appear to operate normally or exhibits a marked change in operation.
  - e) The product has been dropped or the enclosure damaged.
20. Servicing. Don't attempt to service the product beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

## **UK users please read this important safety information**

### **Fuse replacement**

This appliance is fitted with a non-rewireable 13 Amp mains plug. The plug contains a 5 Amp fuse. If the fuse has blown it can be replaced as follows:

- a) Pull out the red fuse cover/carrier.
- b) Remove and dispose of the blown fuse.
- c) Fit a new 5 Amp BS1362 approved fuse into the carrier and push the carrier back into the plug.

Always ensure the fuse cover is fitted. If the fuse cover is missing do not use the plug. Contact your Linn retailer to obtain a replacement fuse cover.

Fuses are for fire protection and do not protect against electric shock.

### **Mains plug replacement**

Should your mains plug need replacing and you are competent to do this proceed as follows. If you are in doubt contact your Linn retailer or a competent electrician.

- a) Disconnect the plug from the mains supply.
- b) Cut off the plug and dispose of it safely. A plug with bared conductors is dangerous if engaged in a live socket.
- c) Only fit a 13 Amp BS1363A approved plug with a 5 Amp fuse.
- d) The cable wire colours or a letter will be marked at the connection points of most quality plugs.  
Attach the wires securely to their respective points. The Brown wire must go to the Live pin, the Blue wire must go to the Neutral pin, and the Green/Yellow wire must go to the Earth pin.
- e) Before replacing the plug top ensure that the cable restraint is holding the outer sheath of the cable firmly and that the wires are correctly connected.

### **WARNING**

THIS APPLIANCE MUST BE EARTHED.

### **Replacing the fuse**

Should the mains fuse blow replace it only with an equivalent part. The fuse holder is located just below the mains inlet socket. To replace the fuse disconnect the product from the mains supply. Using a flat blade screwdriver remove and replace the fuse. If the fuse blows a second time there is a fault in the product. Contact your local retailer.

**Fuse ratings.** See specifications section.

**Mains voltage operating range.** See specifications section.

**Warning!! The power supply may be destroyed if a unit designed for 115V is connected to 230V.**

## CE Declaration of Conformity

Linn Products Ltd declare that this product is in conformance with the Low Voltage Directive 73/23/EEC and Electromagnetic Compatibility 89/336/EEC as amended by 92/31/EEC and 93/68/EEC.

The conformity of the designated product with the provisions of Directive number 73/23/EEC (LVD) is proved by full compliance with the following standards:

Standard number	Date of issue	Test type
EN60065	1993	General requirements Marking Ionizing Heating under normal conditions Shock hazards under normal operating conditions Insulation requirements Fault conditions Mechanical strength Parts connected to the mains supply Components Terminal devices External flexible cords Electrical connections and mechanical fixings

The conformity of the designated product with the provisions of Directive number 89/336/EEC (EMC) is proved by full compliance with the following standards:

Standard number	Date of issue	Test type
EN55013	1994	Conducted emissions
EN55013	1994	Absorbed emissions
EN60555-2	1987	Harmonics
EN60555-3	1987	Voltage fluctuations
EN55020	1994	Immunity

## FCC notice

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.

**M**USIC enriches your life. It can stimulate you, relax you, change your mood and provide entertainment and pleasure.

A good hi-fi plays recorded music well enough to give you these benefits, and it will broaden and deepen your appreciation of music.

At Linn we devote our energy to improving standards of music reproduction, because we know that the better the sound the more you'll enjoy music at home.

The addition of any Linn component will improve the sound quality of your system.

We have a policy of continuously improving our products and wherever possible make these improvements available as upgrades.





**I**NTRODUCTION The Linn AKTIV Crossover modules enable the filtering, amplifiers and loudspeakers in your hi-fi system to work together in an ideal way. The active filters give greater accuracy and lower distortion than conventional passive crossovers. The power amplifier is connected directly to the drive units so that none of the amplifier's power is lost. The drive units are more controlled, give lower distortion and higher efficiency. A good active system gives a sound which cannot be achieved by any other means. You just have to listen to it.

A crossover is a filter which splits the complete music signal into two or more frequency bands before it is fed to the drive units in the loudspeakers. This is done because no single drive unit can operate over the entire musical range. With a passive crossover, this filtering is done after the power amplifier, so only one power amplifier is required. With an active crossover, the filtering is done before the power-amplifier, so it becomes possible to dedicate a power amplifier to each drive unit. This is ideal for both the amplifier and the drive unit.

The problem with passive crossovers is that you can only ever get out of them less than you put in; they work essentially by absorbing signal, so the more accurate you try to make them, the less efficient they become and the more amplifier power is consumed. In an active crossover, electronic amplifiers which have gain are used so there is no such trade-off between accuracy and efficiency. This allows highly sophisticated response correction for the loudspeaker to be implemented.

These modules are designed to be fitted inside Linn power amplifiers. This approach has many advantages. Linn manufacture both the amplifiers and the speakers involved, so the modules can be optimised for a well understood environment. Sound quality is improved by reducing the number of cables and connectors, which also makes the installation a lot neater, and expense is reduced because there is no need for a separate case and power supply. The modules are built using the latest surface-mount technology, which keeps the circuitry very compact, minimises connections and improves immunity to interference. As with all other Linn Electronics, there are no mechanical controls in the signal path - all adjustments are done with solid state switches, which cannot age or add distortion.

Because of Linn's modular approach, these advanced crossover modules deliver high performance without losing flexibility - there is a coherent upgrade path for virtually all Linn speakers.

#### DID YOU KNOW ...?

Loudspeakers are often described as being easy or difficult loads for an amplifier to drive. In fact, it is the crossover that presents the difficult load; drive units themselves are easy loads on an amplifier.

A typical hi-fi passive crossover will lose about 30% of the input signal.

It is almost always a bass signal which causes an amplifier to clip. When an amplifier clips it sounds terrible because instantaneously all the signal disappears. In a passive system, because there is only one amplifier, the entire music signal is lost. However, in an active system only the bass amplifier clips - the mid-range and treble keep going. This gives an active system a perceived power advantage of typically ten-fold over a passive system.

If we were to make a passive crossover for the KELTIK speakers, with performance equal to the active one, you would need a 1000 watts per channel amplifier to drive it, and 900 of those 1000 watts would be lost in the crossover.

#### INSTALLATION

Because these modules are installed inside the power amplifiers where there are potentially lethal voltages, your retailer will have fitted them for you. He will also have converted your loudspeakers from passive to active, which simply involves by-passing the internal passive crossover (except for KELTIK, which is active only).

The positioning of the loudspeakers in the room is determined by the room layout, and where they give the best sound. The power amplifiers can be put close to the speakers or the pre-amplifier, whichever is most convenient. Your Linn retailer has been trained by Linn to install active systems, and we have a well-defined active system installation procedure which he will follow. This will include experimenting with different loudspeaker positions to find which gives the most musically satisfying result, and also making fine

adjustments inside the crossovers to optimise the loudspeaker system for the room where necessary.

#### CARE

If you want to disconnect or move your hi-fi, your retailer will be happy to do it for you. If you choose to do it yourself be very careful reconnecting it as a mistake could damage the amplifiers and loudspeakers.

Please also observe the following warnings:

**Do not use your amplifiers with any other loudspeaker** - you may damage the loudspeaker and it wouldn't sound any good anyway.

**Do not use your speakers with any other amplifier** - they have no crossover so they would sound terrible and you will almost certainly blow the tweeter.

**Do not under any circumstances open the amplifier covers, or attempt to adjust them, as potentially lethal voltages exist inside.**

## SPECIFICATIONS

Active crossover modules optimised for use with Linn KELTIK, KABER, KEILIDH, TUKAN, SEKRIT, 5140 and 5120 active loudspeakers. (KABER, KEILIDH, TUKAN, SEKRIT, 5140 and 5120 are converted internally from passive to active by your Linn retailer)

Input impedance	(per module)	10k $\Omega$
KELTIK system input impedance		2k5 $\Omega$
KABER system input impedance		3k3 $\Omega$
KEILIDH system input impedance		5k $\Omega$
SEKRIT system input impedance		5k $\Omega$
TUKAN system input impedance		5k $\Omega$
5140 system input impedance		2k5 $\Omega$
5140 in 5105 system input impedance		1k6 $\Omega$
5140 in KLOUT system input impedance		3k3 $\Omega$
5120 system input impedance		5k $\Omega$
5120 in 5105 system input impedance		2.35k $\Omega$
Input sensitivity		1V rms
Hum and Noise when used in LK100 and KLOUT		-90dBV
Adjustment range:	Treble	$\pm$ 2dB in 0.5dB steps (approx)
	Bass	$\pm$ 4dB in 1dB steps (approx)
	Keltik extension	-3db at 20, 30, 40 or 50Hz (approx)

SYSTEM SETTINGS

Loudspeakers \_\_\_\_\_

Amplification \_\_\_\_\_

	Initial Setting	First Tune-up	Second Tune-up
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Treble Setting	_____	_____	_____
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Bass Setting	_____	_____	_____
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Bass Extension	_____	_____	_____
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Installed By	_____	_____	_____
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Retailer	_____	_____	_____
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Date	_____	_____	_____
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Notes	_____		
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## GUARANTEE AND SERVICE

The Linn AKTIV Crossover is designed for a long life and any servicing should only be carried out by an authorised retailer.

For technical support and product queries/information:

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