

**LINN**

**KLIMAX CHAKRA 500 Twin**  
**Dual Speaker Power Amplifier**

Owner's Manual

English

Each KLIMAX CHAKRA 500 Twin power amplifier is unique in its manufacture. With its machined and hard-anodised solid casing, the KLIMAX CHAKRA 500 Twin is a referenced component which is as individual in its finish as it is in its phenomenal pitch-accurate performance.

Linn has employed the highest quality of machined finishes, allowing the KLIMAX CHAKRA 500 Twin's natural alloy grain structure to become visible. This gives each unit an individual signature that makes ownership a uniquely rewarding experience. Linn customers should accept and understand that there are variances between units. Such variances are the natural result of the metal's grain structure and indicative of an exceptional product finished individually to the highest standards.

# 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.

FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH THE CORRECT TYPE OF FUSE  
DISCONNECT SUPPLY CORD BEFORE CHANGING FUSE.

## **WARNING**

SHOCK HAZARD. DO NOT OPEN.

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

## **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.

# Important Safety Information

## 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 safety purpose of the polarised or grounding type plug. A polarised plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. When the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 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. Mains plug.** Use the mains plug to disconnect the product from the mains supply. The mains plug must be accessible at all times. Use the mains switch (if applicable) when the product is not in use.
- 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. Lightning storms.** Unplug this apparatus during lightning storms or when unused for long periods of time.
- 18. Objects and liquid entry.** Do not let objects or liquids fall into the product. Do not expose the product to dripping or splashing. Do not place a vessel containing liquid on top of 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.** Do not attempt to service the product beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

# Important Safety Information

## UK users please read this important safety information

### Replacing the fuse in the mains plug

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.

# CE Declaration of Conformity & FCC Notice

## 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:

<b>Standard number</b>	<b>Date of issue</b>	<b>Test type</b>
EN60065	2002	General requirements Marking Hazardous radiation 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 Protection against electric shock Stability and mechanical hazards Resistance to fire

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:

<b>Standard number</b>	<b>Date of issue</b>	<b>Test type</b>
EN55013	2001	Conducted emissions
EN55013	2001	Absorbed emissions
EN55020	2002	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.

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# Contents

<b>Introduction</b>	<b>2</b>
<b>Features</b>	<b>3</b>
<b>Inside the KLIMAX CHAKRA 500 Twin</b>	<b>3</b>
<b>Casing</b>	<b>3</b>
<b>Power supply</b>	<b>4</b>
<b>Audio circuitry</b>	<b>6</b>
CHAKRA explained	7
Output current and protection	7
<b>Installation</b>	<b>9</b>
<b>Heat</b>	<b>9</b>
<b>Mains supply</b>	<b>10</b>
Operation	10
Mains supply and performance	10
Mains supply and output power	10
<b>Inputs and outputs</b>	<b>11</b>
<b>Operation</b>	<b>12</b>
General	12
Signal sensing	12
Protection	12
<b>Technical Specifications</b>	<b>13</b>
<b>Guarantee and Service</b>	<b>15</b>

# Introduction

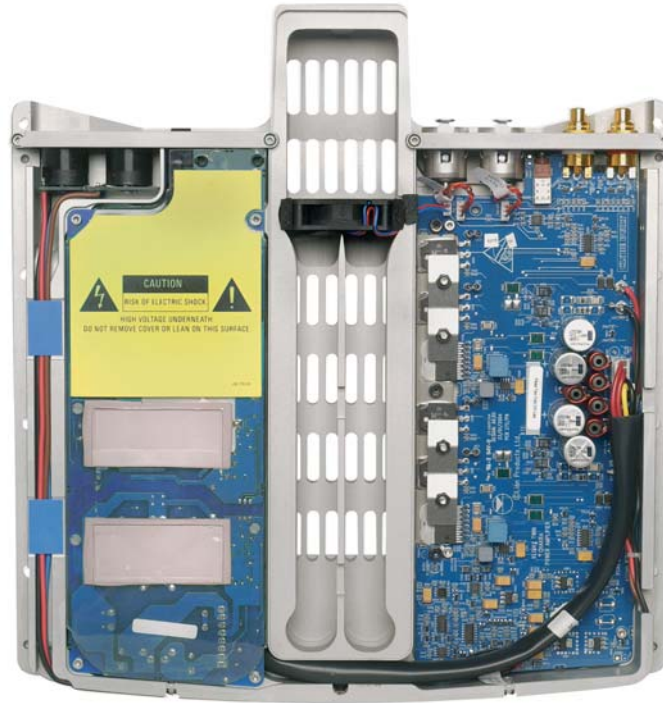
Each of the products within Linn's KLIMAX family embodies a combination of outstanding audio performance, machined-from-solid build quality and seductive looks. The KLIMAX CHAKRA 500 Twin uses advanced proprietary technologies and exemplifies Linn's constant endeavour to make ever better sounding products. Put simply, this is the finest 2-channel power amplifier Linn has ever made and we are confident that the KLIMAX CHAKRA 500 Twin will give you many years of listening pleasure which will grow over the passage of time.

The following chapters explain some of the technologies which make this product so special, however simple installation and operation instructions can be found in the *Installation* and *Operation* chapters, in the latter part of this manual.



# Features

## Inside the KLIMAX CHAKRA 500 Twin



### Casing

The KLIMAX CHAKRA 500 Twin's casing is precision machined from two solid sections of aluminium alloy. The machining is carried out on a computer controlled multi-axis machining centre, with the final cut on the top face made by a Swiss SIP vertical jig borer, the stability and accuracy of which is unequalled. This compact, yet solid and heavy case, protects and stabilises the internal electronics and forms the heat exchanger to dissipate the power from the amplifier circuitry. Inside the case are two circuit boards, one on each side of the central heat exchanger. One circuit board accommodates the power supply and the other, the audio circuitry. This arrangement, coupled with the section of solid aluminium casing that separates them, very effectively isolates the audio circuitry from the power supply.

The compact form of the KLIMAX CHAKRA 500 Twin case reflects our intention to keep the audio signal path as short and simple as possible. Applying this rule rigorously results in high density circuitry which generates and receives the absolute minimum level of electrical noise.

## Power supply

In most power amplifiers, the power supply comprises a large transformer, a rectifier and reservoir capacitors, which are often as large as the transformer itself. The highest performance amplifiers also have voltage regulators which maintain the power supplied to the amplifier circuitry at a constant level, regardless of the input voltage or the output load. The size of these components dominates the amplifier's dimensions and affects the 'tightness' of the audio path, and if voltage regulators are present the power dissipation of the amplifier increases by up to 50%. This conventional type of power supply is simple, reliable, tolerant of overload and predictable. On the down side it is very bulky, heavy, slow to respond, inefficient, causes high mains power distortion, can cause electrical and acoustic noise and requires a relatively long and exposed audio path.

In the KLIMAX amplifiers we use a technology that we have been developing and using in our low power products for several years, called 'switch mode'. This concept is not new; it has been used in computers since the 1960's, however applying it to audio was generally considered, at best, inappropriate. The potential downsides of switch-mode in audio devices are electrical noise, high complexity and potentially lower reliability, complex certification requirements, design difficulty and high engineering cost. These drawbacks have kept switch mode out of most audio equipment. On the other hand, the potential benefits of switch mode power supply technology are compactness, high efficiency, fast response, good mains input tolerance, good load tolerance, low acoustic noise and, with its low material use, environmental friendliness.

### What is switch mode?

In a switch mode power supply the incoming mains is filtered then rectified to generate a very high voltage dc (direct current) supply - usually of about 300 to 350 volts dc, which is far too high to operate audio circuitry directly, and is still connected directly to the incoming mains supply.

This high voltage is chopped up by very fast semiconductor switches and applied to a small transformer which both converts the voltage to the value required by the electronic circuitry and provides a safety isolation barrier from the mains supply. The size of a transformer reduces as its operating frequency increases, so a transformer operating at say 60,000 cycles per second is a fraction of the size of one operating at mains frequency of 50 or 60 cycles per second.

On the output of the transformer, very fast rectifiers, a small coil and small capacitors filter and convert the high frequency waveform back to dc, ready for the electronic circuitry to use. By controlling the timing of the switches, the output voltage can be held constant or varied, as required, without the need for further inefficient voltage regulators. This processing all happens well above the range of human hearing, which is beneficial in situations where audio circuitry is involved.

# Features

## **So what's the problem?**

The first problem is that a switch-mode power supply is a lot more complicated than a mains transformer (a few kilos of copper and iron), a rectifier and some large capacitors. A switch mode design will contain dozens of parts, most of which are quite delicate but still have to operate reliably in a very electrically hostile environment. We have been designing and building switch mode supplies for our CD players, tuners, pre-amplifiers and multi-room components for several years and can now make them more reliable than the conventional transformers they replaced. But this takes persistence, thoroughness and a very consistent, high quality manufacturing process.

The second problem, which is what stops most manufacturers considering switch mode for audio, is the potential high frequency electrical noise, or more precisely, preventing the high frequency signals becoming electrical noise. The scale of the problem is quite daunting. The high frequency signal applied to the transformer, if connected to an external antenna, would obliterate radio reception for miles around (please don't try this at home!). This must be controlled and reduced so that it not only meets international legal regulations but also prevents any audible or measurable interference with any of the audio circuitry. This does not happen by itself, but takes experience, thorough precision engineering and diligent quality control. Only when all of this is achieved can the potential audio benefits of switch mode start to be revealed and exploited.

## **Switch-mode - some assorted facts**

The transformer in the KLIMAX CHAKRA 500 Twin is less than 40mm (1.5 inches) cube. In the KLIMAX CHAKRA 500 Twin it can deliver 1000 watts (at 50/60 Hz it could deliver only about 5 watts).

The reservoir capacitors in the KLIMAX CHAKRA 500 Twin are about the size of a thimble but give better filtering than ones the size of a beer can that are used in other very powerful amplifiers.

The semiconductor switches turn on and off in about 20nS (0.00000002 s). The overload protection for the switches can detect a potentially destructive condition and protect the switches in less than half a microsecond ( 0.0000005 s).

Linn have patent protection for the innovative noise control technique that is used in the KLIMAX CHAKRA 500 Twin switch-mode power supply.

## Audio circuitry

At Linn, because we strive for continuous improvement in everything we do, we use appropriate technologies to achieve our goals.

There have been many fine amplifier designs over the history of audio. Some use valves (tubes), some use bipolar transistors, some MOSFETs. Some manufacturers swear by Class A, others by Class AB, one or two by Class D, and many others are somewhere in between. Two designs can use the same components, but achieve completely different results. We believe, and have evidence to support, that what you do with the parts and technology is always much more important than the nature of the technology. To illustrate this, our current power amplifier range contains MOSFET, monolithic, discrete and bipolar designs. Our latest monolithic designs sound better than our previous discrete bipolar designs. Our latest bipolar designs have more power and sound better than our earlier monolithic and bipolar designs.

### **So what did we choose for the KLIMAX CHAKRA 500 Twin?**

For several years we have been designing and building power amplifiers using monolithic (single chip) power devices. Monolithic circuits are, in principle, the optimum way to design the direct signal path circuitry within a high-performance power amplifier. With a monolithic design, all the required audio circuitry is contained within a few square millimetres of silicon, minimising circuit area for the shortest possible signal path, making them inherently less susceptible to unwanted interference and enabling the amplifier to operate at higher speeds. They also accommodate a circuit complexity which is not practical with a discrete design and offer high-performance through tightly controlled and matched device behaviours.

Unfortunately the investment required to design and manufacture these chips typically results in costs which are prohibitive to short-run specialist applications such as high-end audio. Consequently they are more often targeted at high-volume applications where audio performance is not the most important parameter. For a number of years, Linn has worked closely with a trusted microchip manufacturer and as a result of developing this relationship, exceptional capability has been designed into a high-volume chip, enabling us to realise the potential of this technology without incurring unfeasibly high production outlay.

This aside, monolithic topologies do present a number of other technical challenges which, whilst not insurmountable, can compromise the potential of the design. The most significant of these is output current, which is limited due to both the compactness of the circuitry and the chip fabrication process, typically resulting in unwanted distortion at high listening levels. Monolithic designs also have a tendency to be less rugged than a well-crafted discrete design.

## **CHAKRA explained**

Monolithic technology is used throughout Linn's product range, both as single chips and paralleled to increase power output. The CHAKRA topology is the culmination of more than 5 years of continuous development of Linn's high-power monolithic amplifier audio circuits, however the actual concept that became CHAKRA was initially conceived during development of Linn's first professional monitoring loudspeaker, which required greater power and performance than even our reference monolithic power amplifier, the KLIMAX 500 Twin, could offer. Work therefore began on developing a solution which performed accurately and consistently in even the most demanding monitoring applications.

The CHAKRA topology uses an array of large bi-polar transistors as 'boosters' around a single monolithic. While this in itself is not a new idea, Linn's execution of the monolithic to bi-polar transition is unique, and a patent application for the design has been submitted. When output current is less than a few amps, all the power output comes from the monolithic, maximising the speed and linear properties of this design. At higher output currents the bi-polars provide the majority of the output current, leaving the monolithic to operate well within its capability and able to correct any error instantaneously. Even under extreme overload conditions, like short circuit, the monolithic never delivers more than a fraction of its safe output, while separate circuitry protects the bi-polars. So with safe current output virtually unlimited, CHAKRA offers low-frequency response down to near DC, which is essential for the very latest servo-controlled bass technology. The topology is very compact, actually reducing the circuit area and length of signal path compared to previous paralleled designs and is also highly efficient, running cooler than any previous Linn amplifier.

## **Output current and protection**

The KLIMAX CHAKRA 500 Twin has a simple decision-making protection circuit; either the output current is safe or it is not. If it is not, the amplifier shuts down instantly for a few seconds. An unsafe output current is defined as a level of current above a specific threshold for a length of time, or an instantaneous current above an absolute threshold. If neither of these conditions is violated, the amplifier is delivering all the current requested by the load. It is very easy to tell – when the protection circuitry triggers; the amplifier stops.

A commonly asked question about a power amplifier concerns its maximum output current. There is reason behind this question – i.e. there is always some trade off between output power, 'specmanship', protection and cost in a power amplifier. Output power specification (into 8 Ohms) can be increased simply by increasing the amplifier power supply rails slightly. But what then happens with a 4 Ohm load? Can the amplifier now supply the extra current that a 4 Ohm load needs or will the power supplies collapse (or will the amplifier protect itself?) Short circuit protection can be achieved simply, but at the cost of accidental operation when the loudspeaker load is reactive (almost always) rather than purely resistive (almost never). Output current and ruggedness can be increased with the cost of paralleled output transistors, but can the driver circuitry cope?

## Features

Hence the interest in output current. However the implication that 'more is better' is true only up to a very modest and calculable limit. An electrical load, be it a resistor, capacitor, inductor, a loudspeaker or a hairdryer takes an amount of current, dependent on the voltage applied to its terminals, and its operating condition. Although it is not always entirely obvious how much current a load will take with a non-sinusoidal signal (like music), its maximum possible value is easy to calculate and to monitor in real operation. If an amplifier can provide this amount of current into the specified load while keeping safe and stable and not suddenly dropping its output voltage, it is enough - the load cannot draw any more. The current draw is the result of the voltage applied. If an amplifier protects itself by 'current limiting', it will drop its output voltage if too much current is demanded. This is a bad thing for an audio amplifier, in terms of sound but not uncommon. If the current limiting never operates under real conditions it is both a harmless and a good way to protect an audio amplifier. The problem can then be to know if the protection ever triggers or not. This nagging doubt, though often ill-founded, has resulted in some concern (and boasts) about amplifier output current. The KLIMAX CHAKRA 500 Twin, like all Linn amplifiers, is specified into a 4 Ohm load. We don't do this to claim a bigger output power, but to show that our amplifiers are intended and fully specified for operation into 4 Ohm loudspeakers (and most Linn loudspeakers have a nominal 4 Ohms input impedance).



# Installation

The compactness of the KLIMAX CHAKRA 500 Twin makes it very easy to install and makes possible high power multi-amplifier systems which would be impractical with conventionally designed amplifiers of similar power, because of their size and weight. The unique wall-mount system can be used to minimise the intrusion of the audio system in the living space, while providing good ventilation, concealing the cabling and showing off the subtle beauty of the KLIMAX CHAKRA 500 Twin.

## Heat

The KLIMAX CHAKRA 500 Twin is a very powerful amplifier. Despite the efficiency of the design it must still dissipate considerable power. It has two methods of cooling: natural convection and forced air convection. Both require an ample supply of air for ventilation.

Natural air convection cooling operates for all normal listening conditions, by the heated air rising vertically through the central heat exchanger. The high thermal mass of the case absorbs short periods of high power input with a slow and low temperature rise and the natural convection through the heat exchanger transfers this to the air.

Forced air convection provides an additional level of temperature control. When operating, the fan draws cool air in through the back of the amplifier and blows it along the heat exchanger so that it exits through the front, top and bottom as warm air. Restricting the air flow or playing the amplifier enthusiastically may increase the operating temperature until the internal fan is switched on. The nature of fan operation is dictated to a large extent by International safety regulations, which restrict the touchable surfaces of the product to a fairly low temperature (the circuitry itself can actually operate reliably with the case very uncomfortably hot to touch).

Either way, if the ventilation is very restricted and/or the amplifier is played very enthusiastically, the temperature may continue to rise, despite the KLIMAX CHAKRA 500 Twin's very effective cooling systems and the amplifier may eventually shut down completely. In such cases, it will remain disabled until its temperature has dropped again. This is a design feature and ensures the safe running of the amplifier at all times so is not a cause for concern. It would however tend to cause some degree of inconvenience – the last thing you want is for your audio system to shut down if you are having a party, so always ensure the installation provides plenty of ventilation.

# Installation

## Mains supply

### Operation

The KLIMAX CHAKRA 500 Twin has Automatic Voltage Selection (AVS), allowing it to operate from 90 Vac to 253 Vac. This allows it to be connected to the mains anywhere in the world and the internal power supply will automatically adjust to the incoming supply. When used with a mains supply below 140 Vac, two seconds after switching on the amplifier, the power supply switches to its low range.

### Mains supply and performance

The KLIMAX CHAKRA 500 Twin's switch mode power supply provides excellent tolerance to lesser quality mains supplies, allowing it to perform at close to its best, even with supplies that are fairly badly corrupted. Perhaps an even more significant benefit is that, unlike conventional power amplifiers, it has very little impact on the incoming mains supply. Contrary to popular belief, a conventional audio amplifier does a lot more damage to the mains supply than just about anything else in your house and the mains distortion introduced in this way can adversely affect the performance of other audio components. Linn's switch-mode powered amplifiers circumvent this problem and can therefore help to improve the sound of all the other components in the system.

### Mains supply and output power

For all normal music or AV system operation the actual 'average' output power of the KLIMAX CHAKRA 500 Twin is much less than its maximum rating of 200 watts per channel, thus providing an abundance of headroom. For example, a reasonable listening level requires an average output of about 1 watt per channel and a very enthusiastic listening level would average about 40 watts per channel. With most loudspeakers, 2 x 40 watts output would give an SPL (sound pressure level) of between 100 dBA and 110 dBA, which is a level of considerable power (in real terms it approximates to 'loud party' volume).

The maximum continuous output of the KLIMAX CHAKRA 500 Twin is something that very few loudspeaker drive units (or crossovers) could endure for more than a few seconds. And a typical tweeter, for example could only take it for a fraction of a second, before its voice-coil vaporised. All this means that even though the 'on the laboratory bench' measurements could show an input power of almost 1000 watts with a constant tone input and full rated power, in actual operation it is never anywhere near this level. Given adequate ventilation, the amplifier will operate continuously in any music or AV system at any realistic power level.

With a low mains supply (100 - 115 V), it should however be noted that using maximum load and a signal generator on its input, the mains fuse may blow because lower voltage mains supplies are unable to safely provide the amplifier with enough power to sustain its continuous maximum output.

Although it is extremely unlikely that the failure to achieve maximum power from your KLIMAX CHAKRA 500 Twin will ever be an issue for anyone, if you do live in a part of the world that operates one of the lower mains voltages, installation of a mains supply of 200 V or above for this product is likely to be beneficial in terms of performance.

# Installation

So, as well as providing the amplifier with the ability to reach the product's maximum rated power output (which would simultaneously melt every drive unit in your loudspeaker system and/or seriously impair your hearing), your system is likely to sound better. If you are going to this effort, consider making the new wiring operate at 200 V (for countries operating 100 V mains) or 230 V (for countries operating 115 V mains). All mains wiring should be professionally installed to the applicable local standards.

## Inputs and outputs

The KLIMAX CHAKRA 500 Twin has both unbalanced and balanced inputs, selected by a switch on the back panel. Use the appropriate one to suit your choice of pre-amplifier and cabling. The LED will light to indicate when the unbalanced inputs are selected. Both signals are echoed out the unbalanced 'line out' socket to enable daisy chaining of amplifiers. This switch does not directly pass the audio signal but instead sends a control signal to distortionless solid state switches.

The standard output connectors are 4-contact NEUTRIK® speaker sockets. They each have two 'hot' and two 'cold' connections making it easy to connect two speaker cables per connector. The NEUTRIK® part was chosen for its high quality and connection integrity, compactness and international safety approvals. The KLIMAX CHAKRA 500 Twin is also available with high quality binding post connections.



## General

To operate the KLIMAX CHAKRA 500 Twin is simplicity itself.

The blue light will be dim when power is first applied and will remain dimmed when the KLIMAX CHAKRA 500 Twin is in standby mode. When an input signal is detected, the amplifier is enabled and the light brightens to indicate this condition.

## Signal sensing

In the absence of a music input signal, the KLIMAX CHAKRA 500 Twin reverts to a low power standby mode after around 20 minutes. The signal detector is very sensitive and waits about one second before powering up the amplifier to be certain the signal is real, not just noise. The detection threshold has been found, over many installations, to be a good compromise between sensitivity to low level signals and immunity to noise. However, the residual hiss level from phono pre-amplifiers at moderate volume settings can be enough to trigger the signal sensor. If this does occur, it can be avoided by muting the pre-amplifier or turning its volume down after use. Similarly, if there is audible hum from the loudspeakers, enough noise may be present to trigger the signal sensor. Try to eliminate the source of any hum, as this is essential for a system to sound its best.

## Protection

If the amplifier needs to protect itself it will shut down and dim the light. There is no half way current limiting - the amplifier can either do what is required of it or it will shut down entirely.

It is unlikely that you will ever experience amplifier shut-down at all. If you do and it stays down for more than a few seconds, this could indicate overheating which may take some minutes of cooling to rectify or could indicate a persistent overload condition (e.g. one of the components connected to the amplifier has gone permanently faulty). If it has not returned to normal operation within 10 minutes or so, try switching the unit off at the mains for around 30 minutes and retry. If there is still no operation, consult your retailer who can examine your system and determine the source of the problem.

**We wish you many happy years of listening pleasure.**

From the Linn KLIMAX CHAKRA 500 Twin team.

# Technical Specifications

## General

Dimensions		W 350 mm, D 355 mm, H 60 mm W 13.8", D 13.9", H 2.3"
Weight		9 Kg / 19.84 lbs
Protection	Fuse rating	250 V, T6.3 A
Mains input range		90 Vac - 126 VAc 200 VAc - 253 VAc
Mains frequency range		50 - 60 Hz
Maximum input power		1000 W
Typical operating input power		30 W
Standby power		<13 W

## Amplifier specification

Input connectors:	Unbalanced (switch position in)	WBT® phono socket	
	Balanced (switch position out)	XLR socket	
Pin connections:		Phono	Inner: Hot Outer: Cold
		XLR	Pin 1: OV Pin 2: Hot Pin 3: Cold
Gain	Unbalanced	28.6 dB	
	Balanced	22.6 dB	
Input impedance:	Unbalanced	7K8 Ω	
	Balanced	7K8 Ω	

# Technical Specifications

Input level for clipping:	Unbalanced	1.05 V rms
	Balanced	2.1 V rms
	Signal sensing threshold	>100 $\mu$ V
Output connectors:	Standard	NEUTRIK®
	Optional	Binding posts
Output power	Per channel	200 W rms into 4 $\Omega$
	Per channel	100 W rms into 8 $\Omega$
Load tolerance		Unconditionally stable into all loudspeaker loads
Harmonic distortion		<0.01 %
Frequency response		5.3 Hz to 37 KHz (-3dB)
Peak output voltage		40 V

## Options and accessories:

• Wall mount system • Active crossover system • Binding post output terminals

## Guarantee and Service

This product is guaranteed under the conditions which apply in the country of purchase and your statutory rights are not limited. In addition to any statutory rights you may have, Linn undertake to replace any parts which have failed due to faulty manufacture. To help us, please ask your Linn retailer about the Linn warranty scheme in operation in your country.

In parts of Europe, the United States of America and some other markets, extended warranty may be available to customers who register their purchase with Linn. A warranty registration card is included with the product and should be stamped by your retailer and returned to Linn as soon as possible. Alternatively, register your warranty online at [www.linn.co.uk](http://www.linn.co.uk)

### **WARNING**

Unauthorised servicing or dismantling of the product invalidates the manufacturer's warranty. There are no user serviceable parts inside the product and all enquiries relating to product servicing should be referred to authorised retailers only.

### **Technical support and information**

For technical support, product queries and information, please contact either your local retailer or one of the Linn offices .

Full details of your local retailer/distributor can be found on the Linn web site: [www.linn.co.uk](http://www.linn.co.uk)

### **IMPORTANT**

- Please keep a copy of the sales receipt to establish the purchase date of the product.
- Please ensure that your equipment is insured by you during any transit or shipment for repair.

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