HALCRO

Equinox preamplifier

Owner's Manual

www.halcro.com

Contents

Introduction

Congratulations on your purchase of the remarkable Halcro Equinox preamplifier!

Many years of dedication and collaboration with esteemed reviewers, musicians, scientists, and dealers worldwide have culminated in the creation of this cutting-edge iteration of the Halcro preamplifier.

Our team's scientific expertise, unwavering passion for music, and extensive engineering and development knowledge have empowered Halcro to deliver an unparalleled musical experience, ensuring your satisfaction and enjoyment for years to come.

The goal set for the development of the Halcro Equinox preamplifier was to craft a preamp of extraordinary musical quality, boasting sonic transparency to satisfy the most discerning audio connoisseurs.

This objective was achieved through:

- Incorporating the world's lowest distortion specifications in any preamplifier.
- Maintaining physical dimensions suitable for standard equipment racks, while evolving the iconic and stunning Halcro industrial design.
- Implementing user-friendly controls for effortless operation.
- Delivering superior reliability.
- Pushing the boundaries of innovation by challenging our engineering and design thinking.

Rest assured that your Halcro Equinox preamplifier faithfully preserves the purity of the music. When paired with Halcro power amplifiers, it faithfully reproduces the original recording artist's expression and emotion as intended. There are no added transistor or valve sounds, only an unprecedented level of musical fidelity previously thought unattainable.

We invite you to indulge in the captivating Halcro music experience, where perfect audio reproduction awaits the discerning ears of music connoisseurs worldwide.

If you would like to contact Halcro to give us feedback on your purchase or for general enquiries, please feel free to:

E-mail us at:	sales@halcro.com
via web:	halcro.com/contact/
Telephone:	+ 61 8 8390 1673

Important Safety Information

Symbols

The following symbols are used on this equipment:

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the following pages.

The 'CE' symbol indicates compliance of this device with the relevant directives of the European community including the EMC (Electromagnetic Compatibility) and LVD (Low Voltage Directive) standards.

Warning of electrical shock hazard. Do not open cover (or back). There are no user serviceable parts inside. Refer servicing to qualified service personnel.

Electrical safety

IMPORTANT - This product must always be connected to an earthed voltage supply.

Only suitable approved MAINS cords, as per European individual country requirements in the CE Low Voltage Directive Scheme, shall be used with this unit.

WARNING: do not use any cables longer than three meters.

Do not use extension cords: To avoid safety hazards, use only the power cord supplied with your unit.

WARNING: Do not use extension cords: To avoid safety hazards, use only the power cord supplied with your unit.

Weighs 15 kg (33 lb) per unit. Shipping weight is 20 kg (44 lb) per unit.

No naked flame sources, such as lighted candles, should be placed on the unit.

The Equinox preamplifier is designed to operate on any mains supply in the range of 100 to 240 V, 50 to 60 Hz, without any internal or external switches.

Protection from fluids

This device is designed for indoor use only and is not protected against liquids. It must not be exposed to dripping or splashing, and no objects filled with liquids, such as vases, should be placed on it.

WARNING: To reduce the risk of fire or electric shock, do not expose this equipment to rain or moisture.

Do not allow liquids to enter the unit or contact electrical terminals.

Service warnings

This product contains no user serviceable parts.

All compartments are sealed at the factory. If the seals are broken, the warranty will be void and all service costs will be charged to the owner.

DANGER: Contains no user serviceable parts. Do not attempt to open any of the amplifier compartments, as this may expose you to dangerous voltages and will void the warranty.

Requires T1A 250 V slow blow fuse for continued protection against the risk of fire. Never bypass or use any other type of fuse. The fuse is located on the rear panel in the main switch.

WARNING: Always replace the fuse with the same type and rating as specified: T 1A 250V slow blow.

Protection from overheating

The Equinox generates a certain amount of heat and requires ventilation. Slots and ventilation holes are provided for ventilation purposes, and to ensure reliable operation of the product. To prevent fire hazards, these openings must never be blocked or covered.

Follow the precautions listed below. If these precautions are not followed, overheating or failure may result. Overheating also shortens the working life of all components.

- Do not block the ventilation slots in the sides of the units with any object, including paper, cloths or curtains
- Avoid placing the unit in a built-in installation place such as a bookcase or a rack unless you can provide proper ventilation
- Do not operate the unit inside a cabinet unless it has adequate ventilation (such as an open back panel)
- Allow at least 12 in (300 mm) clearance around the unit

WARNING: Do not obstruct ventilation slots in the chassis.

Lifting or moving

Each unit weighs 15 kg (33 lb) per unit. Shipping weight is 20 kg (44 lb) per box.

Additional Important Safety Instructions for the USA

The following instructions should be followed by customers in the USA in addition to the safety instructions in the rest of this chapter:

- Read these instructions
- Keep these instructions
- Heed all warnings
- Follow all instructions
- Do not use this apparatus near water
- Clean only with dry cloth or according to the cleaning instructions
- Do not block any ventilation openings
- Install in accordance with the manufacturer's instructions
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat
- 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. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus
- Only use attachments/accessories specified by the manufacturer
- Unplug this apparatus during lightning storms or when unused for long periods of time
- Refer all servicing to qualified service personnel

  Servicing is required when the apparatus has been damaged in any way, such as if the power-supply cord or plug is damaged, liquid has been spilled, or objects have fallen into the apparatus, if the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped

Interference warning - US FCC Regulations

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:

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

Changes or modifications not expressly approved by Halcro could void the user's authority to operate the equipment.

For Consumers within the European Union

Do not dispose of this equipment in general household waste or unsorted municipal waste.

The crossed-out wheeled bin indicated on this equipment is an indicator that this unit should not be disposed of in general household waste, but recycled in compliance with local government regulations or environmental requirements.

Please dispose of this equipment via a recycling service or centre, or by returning the unit to the local Halcro distributor. This will enable the equipment to be disposed of in an environmentally safe manner.

Disposal of unwanted waste electronic equipment in landfilled waste may contribute to adverse long term environmental effects due to the leaching of contaminating and/or toxic substances contained within some electronic equipment.

Product Design

Electronic design

At Halcro, we strive to create products that embody excellence. With the Equinox Preamplifier, our goal was to craft a preamplifier that reaches the highest standards of technical and musical prowess.

Our focus lies in delivering audio performance that transcends boundaries, allowing the listener to experience music with heightened emotion and a deep connection to the artist's intent.

We're extremely proud of the Equinox preamplifier, and it's our sincere hope that others will share our satisfaction with this product.

The primary objective with the Equinox was to deliver a preamp with:

- zero compromise on transparency and musicality
- flexibility
- ease of use
- progressive design concepts

In order to meet this challenge, the resulting circuits have particular characteristics:

First, all circuits in the preamplifier have distortion so low that it is almost immeasurable, whether THD, IM and so on.

Second, all circuits in the preamplifier exhibit exceptionally low noise (see specifications).

Third, there is no compromise whatever with the choice of components (Vishay resistors, FKP1 capacitors and so on).

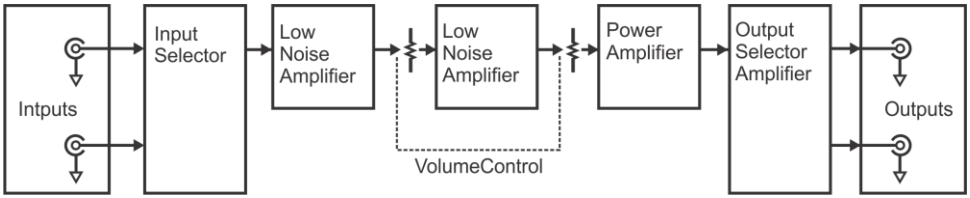
Fourth, the circuits are highly immune to electromagnetic interference. Some inputs and outputs include both first order filters and common mode chokes.

Fifth, the power supply and microprocessor circuits are designed for minimal electromagnetic emissions (extensive filters and separation from audio circuitry).

Sixth, the power supply switching frequency was chosen to be much higher than the audio band (>200 kHz).

Seventh, the power supply rails are exceptionally well regulated, double regulation in fact (switch-mode and linear servo loops).

Eighth, components and design are selected for high reliability.



Audible relay noise

The Equinox preamplifier uses mechanical relays in all switching including the volume control because they exhibit the following ideal characteristics:

- zero ON resistance
- infinite OFF impedance
- very low OFF capacitance
- zero distortion

In contrast, the now universally popular solid-state relays/switches exhibit none of these ideal properties and detract from performance.

For these reasons, sonically, Halcro feels that it is worth the minimal side effect of mechanical clicking sounds when parameters are changed.

Microprocessor control

The excellent audio electronics are complemented and controlled by a central micro-controller that keeps all digital signals away from the delicate audio signals.

The rear connection panel has provision to accommodate seven input devices. There are three pairs of balanced inputs and three pairs of unbalanced inputs. Inputs can be given a logical name and can be mapped to a specific set of output connectors.

The Equinox Preamplifier will retain the last used volume and balance settings in non-volatile memory to avoid large volume jumps when switching between sources during use.

Mechanical design

The enclosures of the Equinox preamplifier are machined from solid aluminium plates of up to 16mm thickness. Every effort has been taken to minimise the effect of microphonic noise generation. The chassis are therefore internally braced with complementary materials that help to dissipate acoustic energy and reduce vibrational modes within the case.

Industrial design

Product form

The aim when designing the Equinox preamplifier was to create a preamplifier that was unmistakably part of the Halcro product family, but at the same time a component that would complement any high-end audio system.

The preamplifier had to sit comfortably within a contemporary domestic environment, retain the visual signature of the Halcro family of products, which differentiates them from other high-end audio products, and have an appearance that reflected the high level of technical innovation.

The Halcro Equinox preamplifier is a bridge between the distinctive design language of the past and the future direction of Halcro's industrial design.

The signature vertical fins of the pillar forms used in the power amplifiers have been carried through to the preamplifier, and the ellipse motif cuts through the case in a distinctive and nod to the Halcro design language of the past.

Control interface

Knobs and buttons

The volume knobs is a multi function control. In default mode is controls the volume and also controls the left/right balance when the unit is in Balance mode. Pressing the volume knob also allows the use to quickly Mute the signal. The knobs and buttons are finished in the same soft textural finish as the rest of the enclosure.

Display

A high-resolution touch-screen display was chosen for the Equinox. The graphic layout of the display has been optimised to give prominence to the functions that are viewed most often. These include volume levels, balance and input selection.

The Halcro Equinox preamplifier can boast its spectacularly low noise and distortion specifications partly due to the mechanical design of their circuit boards and the boxes that contain them.

Remote control

When designing the Halcro Remote Control, we aimed to reflect the quality and forms of the Halcro preamplifiers. Machined from a solid block of aluminum, the remote rests comfortably in the hand with its minimalist array of buttons behind a touch-sensitive glass panel. Simple and logical to operate, every effort has been made to keep this product free of unnecessary complexity.

Unpacking

Before installing your Halco Eclipse, ensure you have read the *Important Safety Information* section on page 3, and have also familiarised yourself with the *Controls and Connections* section on page 16.

If you require assistance in the unpacking and installation of your Halcro amplifier, please contact your dealer.

It is advisable to remove rings or other jewelry and avoid wearing clothing or belts with metal fittings to prevent scratching the product.

When moving the amplifier itself it is recommended that you wear the white gloves provided to prevent marking the preamplifier.

The protective fabric coverings are intended to be removed prior to setup and use.

Storing packaging

The packaging is custom designed to prevent damage from occurring during transport. Store the packaging in a dry location for future transport needs.

Installation

Ensure you have read the Important Safety Information on page 3, before installing your Halcro preamplifier.

If you require assistance in the unpacking and installation of your Halcro preamplifier, please contact your dealer.

	Do not connect to mains power until all the connections are made and checked.

The Halcro Equinox preamplifier can be placed anywhere indoors. The Equinox does not generate significant amounts of heat but please ensure there is a 300mm gap around the unit.

To ensure ultimate performance and to avoid potential safety hazards, place the unit on a firm and level surface. When placing the unit on a shelf, be certain that the shelf and mounting hardware can support the weight of the product.

Controls and Connections

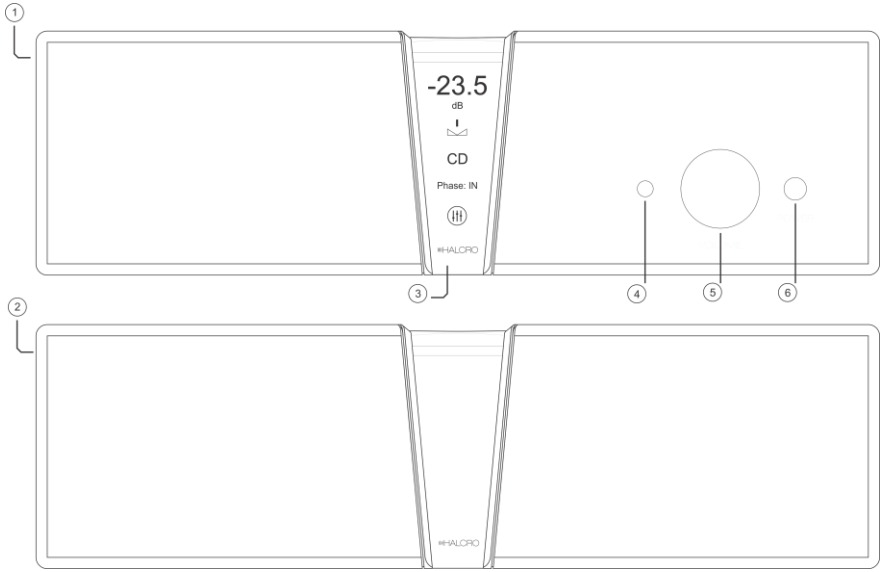


Figure 1 Front Panel

Front Panel

1. **Controller chassis:** This unit contains the power supply and the controller for the amplifier. All power, control and digital sources are contained in this chassis. Power and periodic control signals are sent to the Amplifier chassis by the bespoke umbilical cable provided.

2. Amplifier chassis: This unit contains all of the analogue circuitry.

3. LCD information display: This display delivers messages and system status to assist you in operating the unit. See Fig 2 for a complete breakdown on the display.

4. Remote sensor window: This window covers the remote control receiver

5. Volume control knob / Mute button: This is a multi-function control.

In normal operation, turn this knob clockwise to increase the volume and counter-clockwise to decrease the volume.

Press the button to mute the signal and press again to un-mute and enable the output.

The control can also be used to adjust the balance when in the appropriate control mode.

6. Standby/On button: The Halcro Equinox is designed to remain in Standby mode when not in use. This button will toggle the unit between Standby and On.

To turn the unit off completely, use the Main Power Switch on the rear panel.

7. Settings button.

Allows access to device settings.

Front panel display

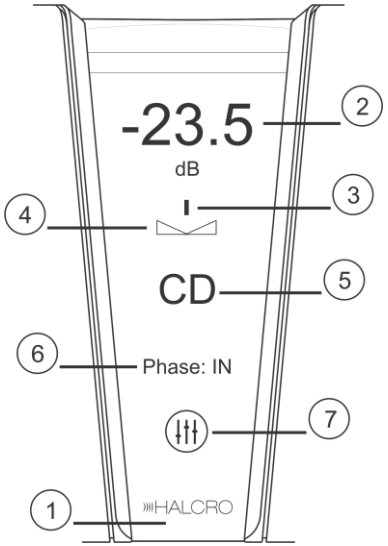


Figure 2: Front Panel Display

1	Main information display
2	Volume
3	Balance
4	Adjust balance button
5	Selected input
6	Phase indicator
7	Settings button

Figure 3: Rear panel – Power Supply and Controller Chassis

Rear panel – Power Supply and Controller Chassis

1. Main power switch, socket and fuse holder: Connection of mains input power.

2. Safety information: Voltage, current and fuse ratings and other safety information.

3. Output power umbilical to Amplifier Chassis: Umbilical cable delivers power to the amplifier. This cable also delivers control signals to the amplifier which set amplifier gain, input and output configuration.

4. Trigger outputs: These send trigger signals to remote power amplifiers to turn them on and off.

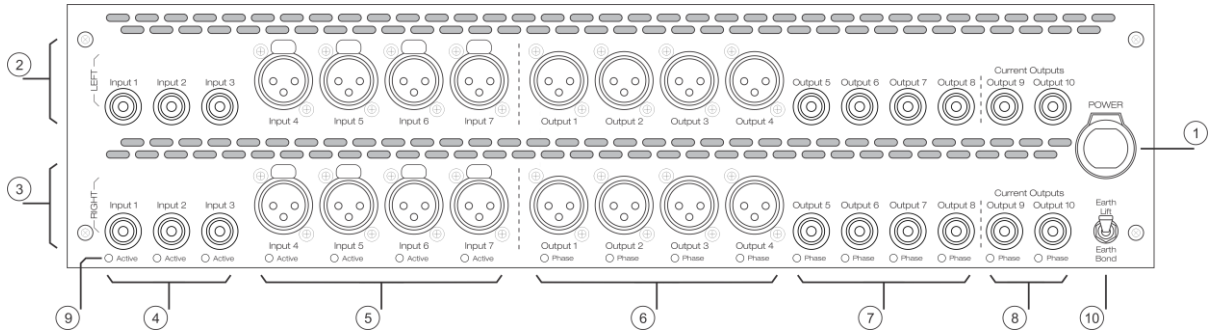


Figure 4: Rear panel – Amplifier Chassis

Rear panel – Amplifier Chassis

1. Input power umbilical connector: Receives power and configuration signals from the power supply and controller chassis.

2. Left channel: Provides connection for the left channel.

3. Right channel: Provides connection for the right channel.

4. Unbalanced inputs: Provides connection to unbalanced signal sources.

5. Balanced inputs: Provides connection to balanced signal sources.

6. Balanced Outputs: Used to connect your Equinox preamplifier to power amplifier(s) via balanced connections.

7. Unbalanced Outputs: Used to connect your Equinox preamplifier to power amplifier(s) via unbalanced connections.

8. Current Outputs: Used to connect your Equinox preamplifier to power amplifier(s) via current connections.

9. Indicators: Used to indicate which input is currently selected and to denote the phase of the active output signals.

10. Earth lift switch: Used to optionally isolate the amplifier chassis from the audio ground in case of a noisy environment

Remote control

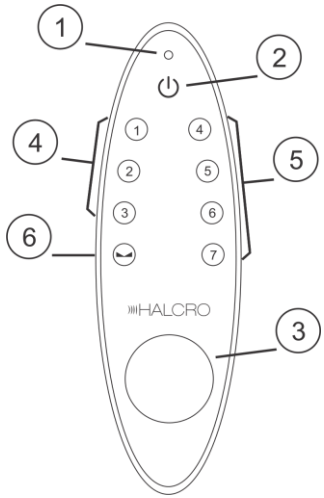


Figure 5: Remote Control

1. Indicator: Flashes when a command has been sent to the preamplifier.
2. Standby/On button: Press to switch the system between Standby and On.
3. Volume control knob / Mute button: This is a multi-function control.
In normal operation, turn this knob clockwise to increase the volume and counter-clockwise to decrease the volume.
Press the button to Mute the signal and press again to un-Mute and enable the output.
The control can also be used to adjust the balance when in the appropriate control mode.
4. Unbalanced signal source buttons: Press to select any one of three unbalanced signal sources on the Equinox preamplifier.
5. Balanced signal source buttons: Press to select any one of four balanced signal sources on the Equinox preamplifier.
6. Balance function button: Press to adjust the balance between left and right channels. When in balance mode the volume control knob is used to adjust balance from right to left. Balance mode times out after a few seconds of inactivity.
Note: The remote control only configures inputs, not outputs.

Remote control batteries

To replace the batteries, remove the battery cover from the rear of the remote control and insert the two AA batteries into the unit (ensure that the polarity is correct). Refit the battery cover.
If the remote control will not be used for a period longer than one month, remove the batteries.

Equinox preamplifier outputs

The current-mode outputs or balanced voltage outputs are most desirable for minimizing earth loop generated mains hum and ripple, or high frequency interference if these are a problem.

Power Amplifiers with current-mode inputs are rare and are most likely to have an RCA input socket. The advantages of this are:

- earth loop generated mains hum and ripple are minimized
- cable, plug and socket-generated interference are minimized (from poor connections, which may be affected by sound vibration for example).

The unbalanced voltage output is quite satisfactory as long as earth loop generated mains hum and ripple are not a problem. (They should not be a problem unless the source equipment is poorly designed.)

Connecting signal sources

As a safety precaution please ensure that the unit is not connected to the mains power while connecting signal sources.

Connect all signal source units (such as a CD player) to the terminals (Fig 3-4, 3-5) at the rear of the preamplifier, making a note of which input each signal source unit is connected to.

Connecting a home theatre processor

As a safety precaution please ensure that the unit is not connected to the mains power while connecting a Home Theater Processor (HTP).

Connect your HTP to any of the programmable inputs at the rear of the preamplifier.

To set the preamplifier to operate with zero gain on this input, adjust the volume to 0.0 dB. These settings are retained by the unit in memory. The preamplifier will then have no effect on the volume. You will now be able to control the volume of your system by using your HTP volume control

Connect the mains supply cable

Plug the main power cable into the main power socket on the rear of the Equinox Control chassis (Fig 3-1).

Connecting to a power amplifier

Each Equinox preamplifier has:

- four pairs of balanced voltage outputs
- four pairs of unbalanced voltage outputs
- two pairs of unbalanced current outputs

Select the method in which you wish to run your power amplifiers, and connect the units using high quality cables.

Outputs are color-coded:

- Positive + right channel (red bezel)
- Negative - left channel (white bezel)

The Equinox preamplifier will drive power amplifiers using balanced and unbalanced voltage sources, as well as an unbalanced current source.

Bridged power amplifier mode

The Equinox preamplifier will also drive power amplifiers in bridged pair configuration via software configuration of the outputs – see the section Bridging Power Amplifiers on page 23.

Note: Use outputs in groups of two (ie. two pairs) for driving bridged amplifiers by inverting the phase of one of the outputs – see the section Bridging Amplifiers on page 23)

Remote power amplifier control output

The Equinox preamplifier has four remote power amplifier control outputs (Fig 3-4), which will remotely switch the power amplifiers from Standby to On. Cables can be purchased through Halcro for details please E-mail us at:

service@halcro.com

Burn-in period

The Equinox preamplifier has undergone a burn-in period at the factory. A further burn-in period is required in your own system.

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Bridging Power Amplifiers

The Equinox preamplifier will control bridged power amplifiers by driving two outputs per channel – one output driven in-phase and the other output driven out-of-phase. These two signals are then used to drive two power amplifier channels connected in a specific configuration – as shown in fig 6 below.

The Halcro Equinox preamplifier can drive bridged power amplifiers with balanced connections (as shown in fig 6), with unbalanced connections or even in current mode.

Multiple pairs of power amplifier channels can be driven in bridged mode from the Equinox.

How Bridging Works

When you bridge two amplifier channels to provide one output both channels are fed the same input signal, but one is out of phase. A loudspeaker is connected between the two amplifier outputs, bridging the output terminals. This doubles the available voltage swing at the loudspeaker compared with the same amplifier used without bridging. Power is inversely proportional to load impedance and proportional to the square of voltage

$$\text{Power} = \frac{V^2}{R}$$

This equation also shows that bridging an amplifier quadruples the theoretical output power.

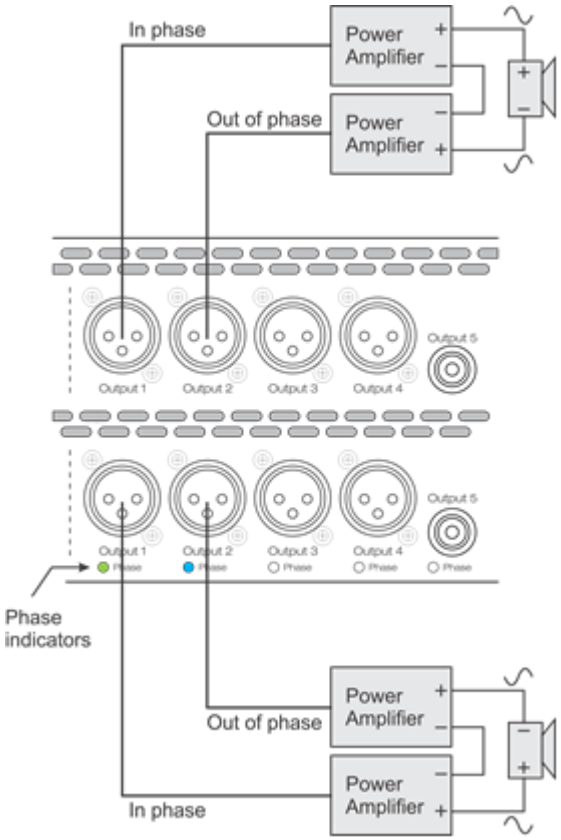

Figure 6: Bridge Mode Configuration

Note: Phase Indicator LED Green when in phase, Blue when out of phase.

Programmable input selections

The Equinox preamplifier has seven available pairs of programmable input connectors: .

- three unbalanced voltage inputs
- four balanced voltage input

Input Modes	Required output source impedance	Input socket	Input impedance
Balanced voltage input	XLR: Low source impedance	XLRV	20kohms + 20kohms
Unbalanced voltage input	RCA: Low source impedance	RCA	20kohms

Table 3

Operation

Start up

Switch the main power switch on the rear of the unit to On (Fig 3-1).

When the unit is switched on at the main power switch the preamplifier will go into Standby mode, shown by a red light in the Standy/On button on the front of the controller chassis (Fig 1-6).

Switch the unit on by pressing the Standby/On button on the unit or by using the remote control. The display will turn on and the red light in the Standby/On button will turn off when the unit is fully turned on. To return the unit to Standby mode, press the Standby/On button again.

	*NOTE: To continue the setup process, the unit must be On, not in Standby.*

Display

Displayed information

In normal use the display (Fig 2-1) will show the volume of the system, displayed in dB (Fig 2-2), the balance between left and right channels (Fig 2-3), the signal source (Fig 2-5) and the phase of the output (Fig 2-6).

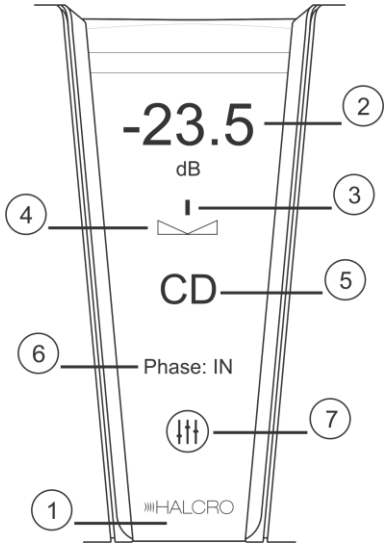

Figure 2: Front Panel Display

1. Main information display
2. Volume display
3. Balance display (shown centred)
4. Adjust balance button
5. Input source and selection button
6. Phase indicator and toggle button
7. Settings button

Settings

In addition to the standard controls for balance, input selection and signal phase accessible by pressing the relevant display area, this display allows you to configure the outputs (Fig 7-1), control the remote trigger functionality (Fig 7-2), and set the screen brightness (Fig 7-3).

Output configuration

The XLR icon (Fig 7-1) shows that the Equinox preamp is configured for balanced output. Press this icon to change the output.

Other settings - Remote trigger

Pressing the config icon (Fig 7-2) allows the user to change the configuration of the remote power amplifier trigger output. This will launch the settings display (Fig 7).

Display brightness

To adjust the display contrast, press the 'Brightness' button (Fig 7-3) and rotate the volume knob on either the front panel or the remote control to adjust brightness. This mode will time-out in a few seconds.

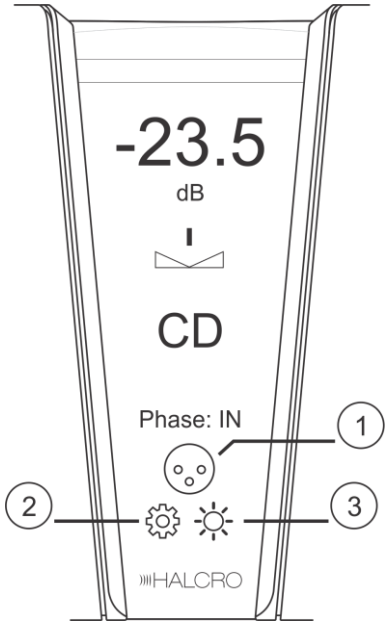

Figure 7: Settings Display

1. Set outputs
2. Config
3. Screen brightness

Volume

Front panel

To change the overall volume of the unit, use the Volume control knob (Fig 1-5). Turn knob clockwise to increase the volume (the maximum volume is +20 dB) and counter-clockwise to decrease the volume (the minimum volume is -60 dB).

To Mute the system, continue to turn the knob counter-clockwise until the word MUTE appears on the display, or press the Volume control knob. To un-Mute the loudspeakers press the Volume knob button again.

Remote control

To change the overall volume of the unit, use the Volume knob on the remote control (Fig 5-3). To Mute the system, continue to turn the knob counter-clockwise or press the Volume knob. To un-Mute the system press the Volume knob button again.

Stored volumes

The Equinox preamplifier memorises volume settings for each input.

A volume setting for each programmed input source is stored on either power off or on selection of a different input. On re-selection of the input, or on power up, the previously stored volume is set.

This accommodates differing source output levels. For example, a modern CD player may have an output up to a few volts, whereas an older type of analog tape recorder may only output a few hundred millivolts. This feature will return the volume setting to the previous value.

After power up and switching from Standby to On the preamplifier will enter the mode it was last in when the power was turned off.

Mute

When the Volume control knob is pressed, the output to the power amplifier is disabled and the volume setting is replaced by 'MUTED'.

If the Volume knob is pressed again the preamplifier output to the power amplifiers is enabled, the power amplifier volumes are used, displayed and the dB symbol returns.

Volume – balance function

The volume can be evenly distributed though the speakers or one channel can be louder than the other.

To adjust the balance, press the balance button on either the main display (Fig 8-1) or the remote control (Fig 5-6) to enter balance mode. The current setting is highlighted in orange on the balance display bar (Fig 8-2).A single green segment indicates balance is even. Adjust balance by rotating the volume knob on either the front panel (Fig 1) or the remote control (Fig 5-3). This mode will time-out in a few seconds.

Phase control

To toggle the unit between in-phase and out-of-phase mode touch the phase icon on the display (Fig 8-3).

Switching between sources

To select a source device, press the appropriate button on the remote control (Fig 5-4) for balanced or (Fig 5-7) for unbalanced inputs.

Alternatively press this named input on the main display (Fig 8-4) to open the input selection display shown in figure 9.

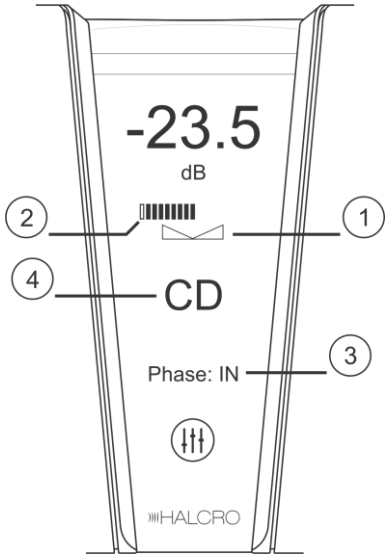

Figure 8: Settings Display

1. Balance button
2. Current balance setting
3. Phase button
4. Current input and selection button

Input selection menu

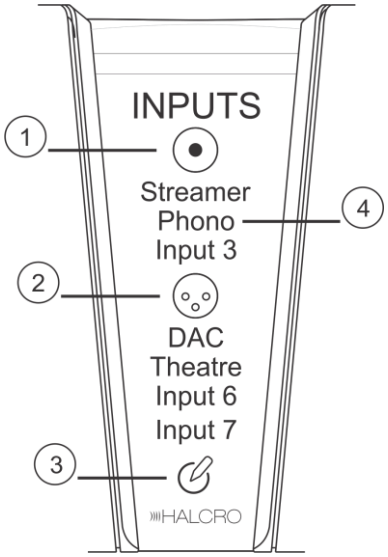

Figure 9:Input selection menu

1. **Unbalanced inputs:** Select an unbalanced input by pressing on the input name. These can be renamed by the user.
2. **Balanced inputs:** Select a balanced input by pressing on the input name. These can be renamed by the user.
3. **Edit inputs button:** Allows the user to rename the inputs from a fixed list of names.
4. To select Phono input press “phono”.

Output selection menu

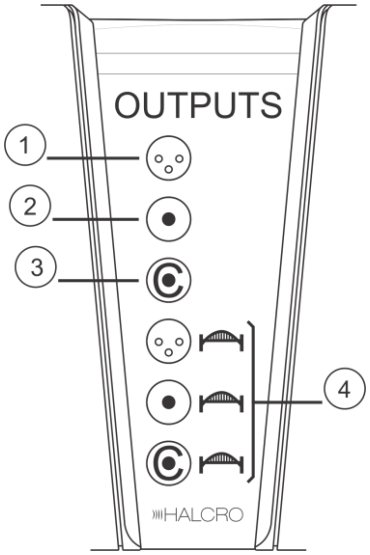

Figure 10: Output Selection Menu

1. **Balanced outputs:** Select balanced outputs by pressing on the icon.
2. **Unbalanced outputs:** Select unbalanced outputs by pressing on the icon.
3. **Current outputs:** Select current outputs by pressing on the icon.
4. **Bridged outputs:** Select bridged mode versions of the above outputs by pressing on the icon. See the section on bridging power amplifiers for a description of bridged output mode and the specific wiring configuration required.

Electronic Protection and Reliability

Components

Our components are selected not only for performance but reliability as well, for example:

- all Halcro electrolytic capacitors are rated at a minimum of 105ºC instead of the usual 85ºC rating
- The operational life of electrolytic capacitors is severely shortened at temperatures near the maximum temperature rating. This is shown in the table below.
- all Halcro integrated circuits are at least "industrial grade" rather than the usual "commercial grade".
- Industrial grade components are rated at least from –40ºC to +85ºC whereas commercial grade components are only rated from 0º to 70ºC. in addition, the electronic specifications of industrial grade components are superior to commercial grade

Considering that most amplifiers run at significantly elevated temperatures, it can be seen from the table below that the Halcro high temperature rated capacitors are highly advantageous compared to the standard 85ºC rated devices.

Mains transient overload protection

The mains input is protected against all but the most severe mains input transients. Two independent circuits achieve this.

Electrolytic capacitor temperature rating	**Mean lifetime at 40 degrees Centigrade**	**Mean lifetime at 85 degrees Centigrade**	**Mean lifetime at 105 degrees Centigrade**
85ºC (most commonly used)	50,000 hours	2,000 hours	0 hours
105ºC (used in Halcro amplifiers)	180,000 hours	8,000 hours	2,000 hours

Equinox Preamplifier Specifications

Inputs (per channel)

- three RCA Unbalanced Voltage Mode
- four XLR Balanced Voltage Mode

Outputs (per channel)

- two pair RCA unbalanced voltage mode, bridgeable
- two pair XLR balanced voltage mode, bridgeable
- one pair RCA current mode, bridgeable

Other Outputs

- four 3.5mm jacks for trigger control of external pow er amplifiers, both pulsed and level output control

Earth Lift

- audio circuitry can be floated from chassis ground to break ground loops in noisy systems

Power supply

Switch-mode, 110 kHz CW, 4th order mains filter, 4th order supply rail filter. Fully complies with EMC and CE standards. Circuit contains extensive mains transient protection and fault sensing protection. 100-240 V AC, 50-60 Hz.

Power consumption

50W max via IEC input.

<0.5W Standby.

Mains voltage

All voltages from 100-240 V AC at 50 to 60 Hz (Power supply will operate up to 270 V r.m.s. but IEC sockets rated up to 240 V by regulatory authorities.)

Controls

On/Standby: Front Panel;

- 1 x Push Button
- Remote Control;
- 1 x Push Button

Volume: Front Panel;

- Rotary Encoder with push MUTE function
- Remote Control;
- Rotary Encoder with push MUTE function

Touchscreen: Capacitive OLED

- Front Panel;
- Context sensitive control of all functionality

Dimensions

Both Audio and Control sections have the following dimensions:

Width: 450 mm, 17.72 in
Depth: 300 mm, 11.81 in
Height: 156 mm, 6.14 in
Weight: 15 kg, 33 lb.

Remote dimensions

Length: 183 mm, 7.2 in
Width: 56 mm, 2.2 in
Thickness: 24 mm, (54mm including volume control) 0.95 in (2.13 in)
Weight: 400g, 0.88lb

Shipping dimensions

Both Audio and Control sections have the following dimensions:

Width: 600 mm, 23.62 in
Depth: 425 mm, 16.73 in
Height: 390 mm, 15.35 in
Weight: 20 kg, 44 lb

Gain

Unbalanced and balanced -60 dB to +20 dB set by volume control.

Volume control

+20 dB to -60 dB in 0.5 dB steps.

Input impedance

- 20 kohm + 20 kohm balanced
- 20 kohm unbalanced

Output impedance

- 170 + 170 ohm balanced and 170 ohm unbalanced
- 30 kohm current mode

Distortion

Immeasurable- below noise floor. At full specified output, < 250 parts per billion (132 dB) for balanced and un-balanced and current modes.

Noise

< 0.6 nV/sqrt(Hz) equivalent input noise for moving coil.

Wideband noise floor -150 dB

Frequency response @ 1 volt

3.3Hz – 352kHz (-3dB)
7Hz – 181kHz (-1dB)

PCB

Four-layer PCBs for ultra high accuracy reference potentials.

Components

Vishay 0.5% resistors and FKP1 1250V or MKP10 in critical audio signal paths.

Memory

All volume gain settings for each programmed input (source) are remembered upon either power off or upon selection to a different input. Upon re-selection to each input, or upon power up, the previously remembered volume for each input is reinstated.

This accommodates differing source outputs. For example, a modern CD player may have an output up to a few volts, whereas an older type of analog tape recorder may only attain a few hundred millivolts. This memory feature thus will return the volume setting at the appropriate previously set value.

Care and Maintenance

The Halcro Equinox preamplifier has been designed for indoor use only. Under no circumstances should the amplifier be allowed to get wet. The only maintenance required is to ensure the unit is kept clean.

Cleaning

Halcro takes no responsibility for any damage caused through careless or improper cleaning techniques.

WARNING: Never use flammable products when cleaning the Halcro Equinox preamplifier.

The outer surface of the unit may be marked if rubbed with an abrasive cloth.

Please read the following procedures very carefully:

- Before cleaning, turn the power to the unit off at the main power switch.
- Use only extremely soft cloths
- Use a soft dry cloth to remove any dust
- Add 15 ml (0.5 oz) of very mild household dishwashing detergent to a four-liter (one-gallon) bucket of lukewarm water
- Immerse the soft cloth in the bucket of water, and then wring the cloth out thoroughly until the cloth is nearly dry
- Use the slightly damp cloth *only* to clean the surfaces
- Never clean any electrical fittings, terminals or the front and rear labels with the damp cloth
- No moisture should ever be allowed to enter the amplifier's compartments through the joins in the panels
- After using the slightly damp cloth, wipe over the surfaces with a soft dry cloth
- Clean the labels using an extremely soft polishing cloth, which must be dry
- Allow the amplifier to air for at least one hour before turning the power back on

If you are unsure about the cleaning of the amplifier and require more information, please ask your dealer or contact Halcro at:

service@halcro.com

Troubleshooting

The Halcro Equinox preamplifier contains no user serviceable parts inside the compartment. Please do not attempt to open the unit as this will void the warranty and will expose you to dangerous voltages. For all service requirements please contact your dealer, or Halcro at service@halcro.com

If the Equinox preamplifier does not operate as expected first switch the Equinox preamplifier back to Stand-by and then switch the main power switch off. Once the display has turned off switch the main power switch back on and then switch the unit from Stand-by to On. This will reset the micro-processors in the Equinox preamplifier.

Symptom	Remedy
No display characters or illumination	Check mains power input is connected and turned on. Check fuse.
No audio output	Ensure the input to which your source is connected is selected. Ensure the selected source is correctly programmed (The light adjacent to correct input pair must be illuminated) Ensure the output select switch is set to the correct output mode. Ensure the Equinox preamplifier is not muted or the volume is too low.
Will not select source	Ensure the source is connected to a programmed input and the program button adjacent to the input is illuminated.
Remote control does not work	Change batteries. Remote transmitter may overload the receiver if too close, ie. less than 100 mm (4 in) from the Remote sensor window. Remote sensor window may be blocked

Table 4

If none of the above rectifies the problem please contact your dealer for service.

Service and Warranty Information

Overview

All Halcro products are designed and built to world-class standards of quality, reliability, and performance. Since so much care has gone into our products, we are able to offer a strong warranty that protects your investment in Halcro products for years to come. It is our expressed desire that your Halcro products work flawlessly and that you enjoy music, movies, and audio/video entertainment without interruption or compromise to performance.

It is the goal of Halcro Customer Service to provide efficient and timely service to Halcro owners and to our dealers. In the event of a technical problem or failure, we will work with you and your authorised Halcro dealer to minimise down time and provide expedient service to remedy the situation. We suggest that your Halcro dealer be the first point of contact should you experience any problems. Solutions are often simple and can be handled in the field. Please do not attempt to open up sealed compartments on any Halcro products.

Product warranty

Halcro warrants the Equinox preamplifier to be free from defects in materials and workmanship for a period of five years from the original date of purchase. During the warranty period, Halcro will remedy all such defects without charge for parts or labor.

Exclusions to the warranty

This warranty does not extend to damage resulting from improper installation or setup, misuse, neglect, or abuse. Changes in the appearance of the product resulting from normal wear and tear, moisture, or atmospheric conditions are not warranted.

The warranty shall be void and of no effect if any of the following occur:

- The defect has resulted from improper, unreasonable, or negligent use
- The defect is a result of accident, tampering, alteration, or modification
- The defect is a result of improper installation or setup by a third party
- The unit's serial number has been removed, altered, or made illegible

Halcro is not liable for incidental or consequential damage of any kind.

Halcro does not warrant system design or installation.

Transferability

Transferability means that the warranty stays with the product from the date of original purchase through the full warranty period, regardless of who owns the product.

The Halcro warranty is transferable, providing that the original sales receipt or proof of purchase is supplied to both the subsequent owners and to Halcro when ownership changes.

Warranty verification

It is the owner's responsibility to show proof or purchase verifying that the unit to be serviced is within the warranty period. Proof of purchase options include:

- Copy of sales receipt showing name of original owner, dealer, and purchase date
- Copy of credit card voucher or cancelled check accompanied by owner's record of purchase date and serial number

Warranty registration

While not required for service, we request that you register your Halcro product as soon as you purchase it or request a copy from your Halcro dealer.

If service is required

We suggest that you work with your authorised Halcro dealer when the need for technical service, training or applications advice arises.

To qualify for free warranty service, the following conditions must be met:

- The unit must be returned to Halcro or its authorised repair center in the original packing materials
- This will ensure the safety of the equipment. If you have misplaced or damaged the original packaging, you can purchase new packaging through your dealer or directly from Halcro
- The unit must be accompanied by a copy of the original sales receipt
- Shipments to Halcro must include a Return Authorisation number
- To obtain this authorisation, please ask your dealer or email Halcro directly (see contact information below)
- Halcro cannot be responsible for any damage caused to your equipment during shipping due to improper packaging
- If the packaging material needs to be replaced on its arrival at the factory, the owner will be informed of the replacement cost

Transportation of products

Halcro pays freight one-way to return product once warranty repair is completed. Halcro requests prepaid shipment to the factory or to a designated repair center or service agency. We are not equipped to accept freight collect shipments.

Halcro is not liable for freight, courier, customs duty or other charges incurred in transporting a unit to and from a dealership, service center or the factory unless written approval and instructions are issued in advance. Such documents must include the Halcro Return Authorisation number, a detailed description of the situation and signature of an authorised Halcro representative.

Freight damage claims

If a unit being returned to Halcro is damaged in shipment, Halcro will contact the carrier for inspection. The carrier will contact the shipper regarding the claim. Halcro is not liable for damage or delays caused in shipment to or from Halcro facilities.

NOTE: The owner must include insurance coverage when returning product to Halcro.

If you have moved

In the event that you have changed locations since your original Halcro purchase, we will happily direct you to your nearest authorised Halcro dealer upon request.

Thank you for choosing Halcro!

We trust that you will enjoy the performance of your Halcro equipment long past the warranty period. Thank you for choosing Halcro!

Copyright and acknowledgements

This product is manufactured by Longwood Audio Pty Ltd trading as Halcro.