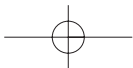


Website: www.astintrew.co.uk



ASTINTrew

AT2000

high definition integrated amplifier



OPERATION MANUAL

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ASTINTrew
True to the source

Operating information for the Astin Trew AT2000 integrated amplifier

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1. Introduction

Congratulations on your purchase of the Astin Trew AT2000 stereo integrated amplifier, an amplifier with musical sound qualities, multi-room and A/V features. This amplifier has been designed and is manufactured to a very high design specification, making it a true audiophile product. It will give you many years of listening pleasure. The following notes explain all aspects of its functions and use, to help you get the very best from it.

The AT2000 integrated amplifier, when used with high-quality audio source components and loudspeakers, will offer an involving musical experience, normally only achievable with far higher priced products.

AT2000 features include:

1. Incorporation of the patented Never Connected™ (NC) power supply, perhaps the lowest noise and cleanest mains power supply available to audiophile amplifier designers. Using the NC supplies allows the designer to use a single toroidal multi-tapped transformer as the NC design ensures that the individual circuits in the amplifier do not 'see' one another and effect the sound qualities.

This can be partially achieved by using separate transformers for each separate circuit, at a much higher cost. The savings made using one power supply transformer have been directed toward higher quality audio components in other areas of the design, offering a higher quality sound and better value.

2. Balanced input and output circuitry, offering the best sounding solution available, short of using specialist and expensive transformers (Bill Whitlock of Jensen Transformers actually helped develop the circuit design for balanced audio we use).
3. The use of over rated power supplies and generous power capacitor storage for the power amplifier MOSFET's.

The AT2000 amplifier has many features that offer flexibility in use, without compromising your enjoyment of the highest quality sound. These include:

- Audiophile quality two or three room function, allowing all your master listening room source components to be used remotely, up to 100Mtrs. distant, offering high quality second room sound through balanced audio cables.
- Alternative two room function, allowing your master listening room source components to be used remotely, up to 100Mtrs. distant, using low cost audio / data cable.
- 2:1 active sub-bass option.
- Pre-amplifier output, for bi-amping
- Line level output for analogue to digital conversion (ADC), recording, or monitoring.

- XLR and RCA (phono) inputs to pre-amplifier.
- Direct input to power amplifier, for integration into multi-channel A/V systems.
- InfraRed (IR) control cable input and output for remote control of source components.
- RS232 data bus connectivity for remote control in 'smart home' installations, compatible with Creston, AMX and other controllers.

The other components you use within the chain will also affect the fidelity of the sound. The AT2000 integrated amplifier deserves to be used with the highest quality source and ancillary components to give the best results, and works particularly well with other AT range products, whilst being flexible enough to work with virtually any other equipment you have in your audio system.

2. Unpacking

Included with your AT2000 integrated amplifier:

Mains lead(s); UK type and Europe type at 230VAC; or US type for 115VAC.

One remote control with batteries.

One Alan Key

One spare fuse, located within the fuse holder, see section 7.

Please retain all packing materials. Re-packing may be necessary to transport your integrated amplifier in the future, without risk of damage to the equipment.

3. AC Mains supply

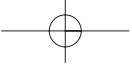
This amplifier is designed to work on either 220-240VAC or 110-120VAC supplies. The amplifier is factory packed at 220-240VAC. If you live in a **110-120VAC supply area, you must change the voltage switch to 115VAC supply.** This switch can be found on the rear face of the unit, next to the mains input socket.

4. Safe use

The amplifier generates the some heat when switched on. Do not place on a carpet or any material where the feet may sink into the surface, obstructing the ventilation slots on the underside.

The amplifier should be located in a well ventilated area and kept away from sources of heat, dust, humidity and direct sunlight.

Do not open the equipment at any time with the mains cable attached to the amplifier. See section 7 for full details.



Do not attempt to change or alter any component or part of this amplifier except for those which are user replaceable (see sections 6 and 7). Unauthorised adaptations will void the warranty and may cause damage.

5. General Set up

After unpacking, check the mains voltage switch on the rear face is set to the correct voltage for your country. IT IS FACTORY SET FOR 220-240VAC. Select the mains cable supplied to suit your mains output socket type. All the mains cables supplied are fitted with an IEC female plug that fits the IEC socket on the rear face of the amplifier.

The performance of this amplifier may be impaired if the electrical supply is in poor condition. We recommend that you use a high-quality wall socket directly, or a multi-way socket unit designed for audio use. You may also wish to try a combined multi-socket and power supply conditioner unit, designed for audio, to optimise fidelity.

We recommend that you place the amplifier on a suitable rack, table or platform support, offering maximum isolation from mechanical vibration.

We also recommend that the amplifier is turned on half an hour or more before use, as most audio electronics sound better once they have 'warmed up' and this is the case with the AT2000 . We do not recommend that you leave it on all the time - but it will come to no harm if you do. From new, you'll find that the amplifier will need about 100 initial hours use to achieve its optimum high quality sound.

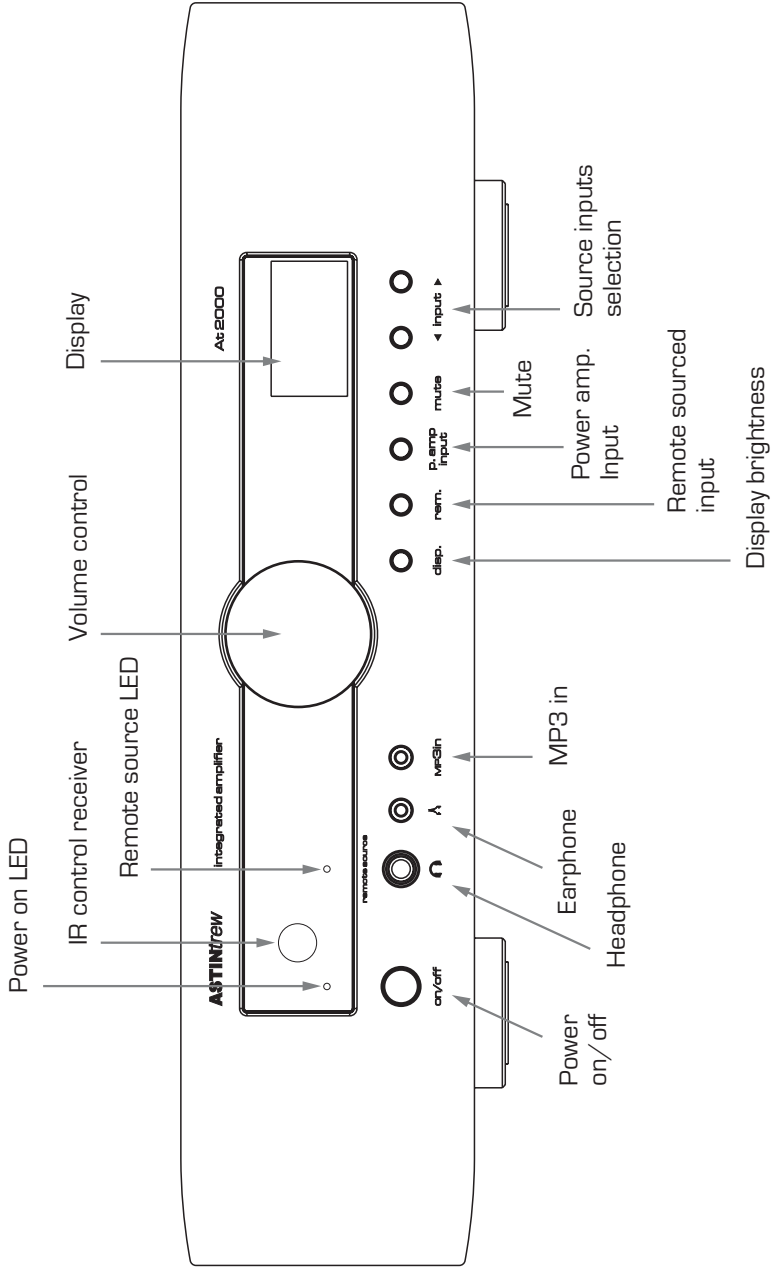
All the RCA (phono), XLR and other sockets are mounted on the rear panel, except for the MP3 input socket. We recommend that you use high-quality signal cables for optimum performance. Upgrading to an audiophile quality mains cable may also improve the sound quality; however, the use of Never Connected™ power supplies does isolate the critical amplification stages in the AT2000.

6. Description of the AT2000 amplifier and functions

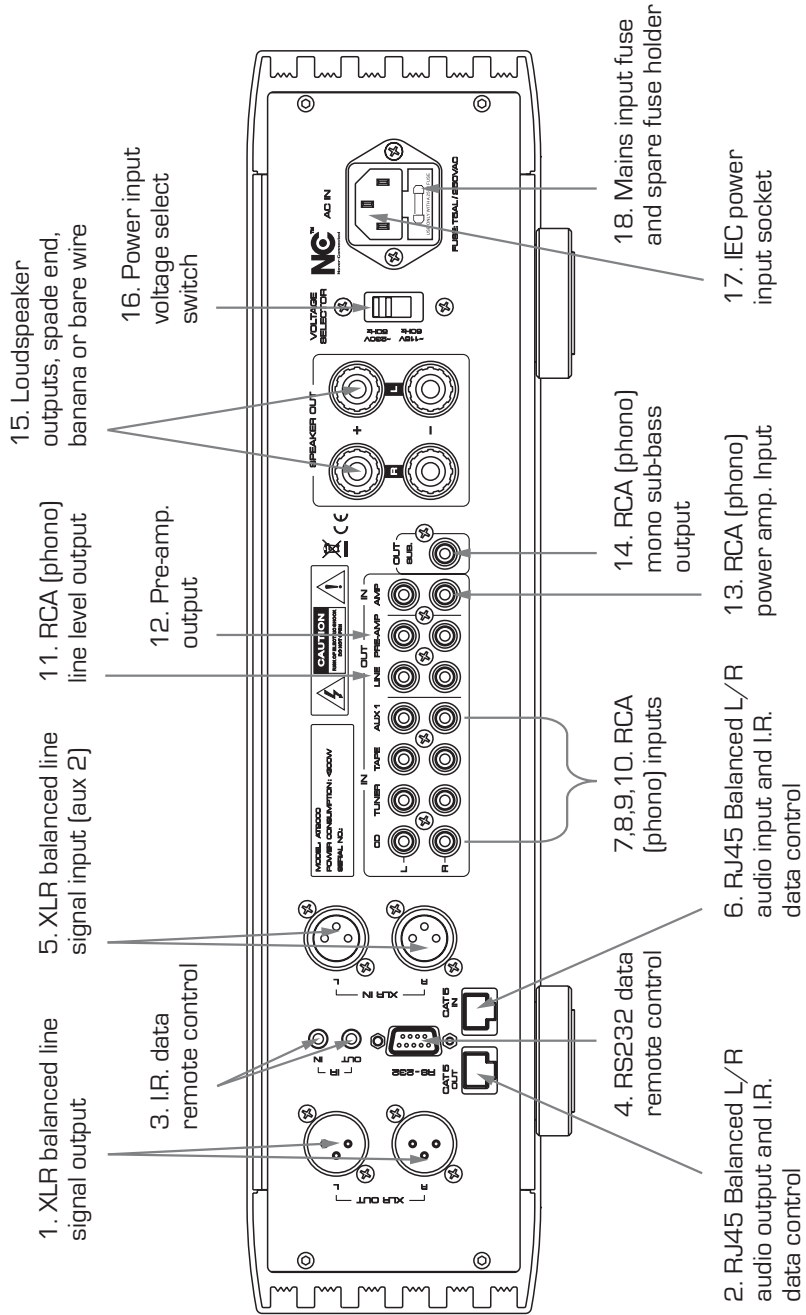
The AT2000 integrated amplifier combines a high quality class 'A' biased pre-amplifier stage, with a hybrid design MOSFET power amplifier. Never Connected™ power supply to the pre-amplifier ensures a perfectly clean and isolated supply, allowing the amplifiers electronics to operate with optimum fidelity under all working conditions. The volume is controlled through a resistor ladder network, ensuring a high quality signal to the power amplifier stage.

The power amplifier design employs a valve in its power supply regulation, optimally driving a single pair of audio quality MOSFET's per channel in a circuit designed with short PCB tracks and minimum components in the signal path. The power amplifier supply is sourced from an overrated toroidal transformer and large (32 Joules) capacitive storage per channel. The power amplifier design is particularly tolerant of low or awkward loudspeaker impedances. The design will offer high quality sound through all loudspeaker types.

Front fascia illustration Figure 1



Rear panel showing connections illustration Figure 2

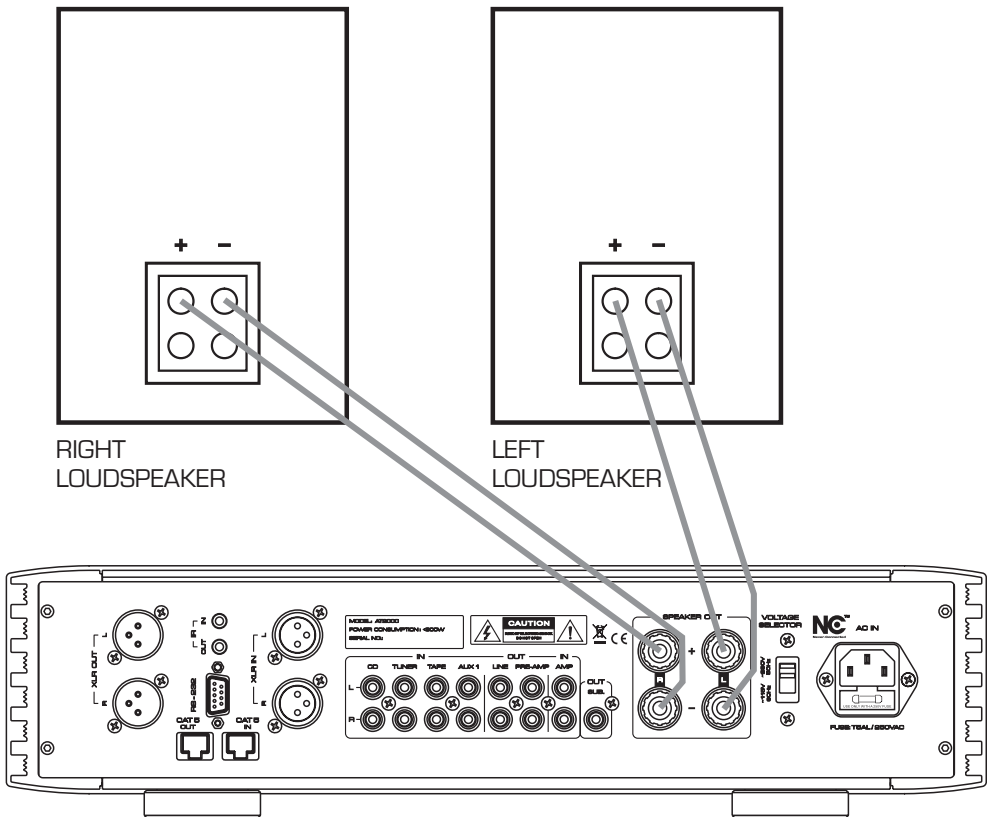


6.1 Stereo amplification, connections.

The AT2000 design has a high quality audiophile integrated amplifier at its heart. In single room operation, there is a choice of XLR (balanced) and RCA (phono) source input sockets. The circuitry running the balanced XLR inputs is driven from a Never Connected™ supply, offering the highest quality sound from your source equipment.

The loudspeaker output binding posts will accept bare cable, banana plug or spade end terminals. To bi-wire your loudspeakers, we suggest you use spade terminals or bare wire connections on the binding posts.

Loudspeaker outputs for stereo configuration illustration Figure 3

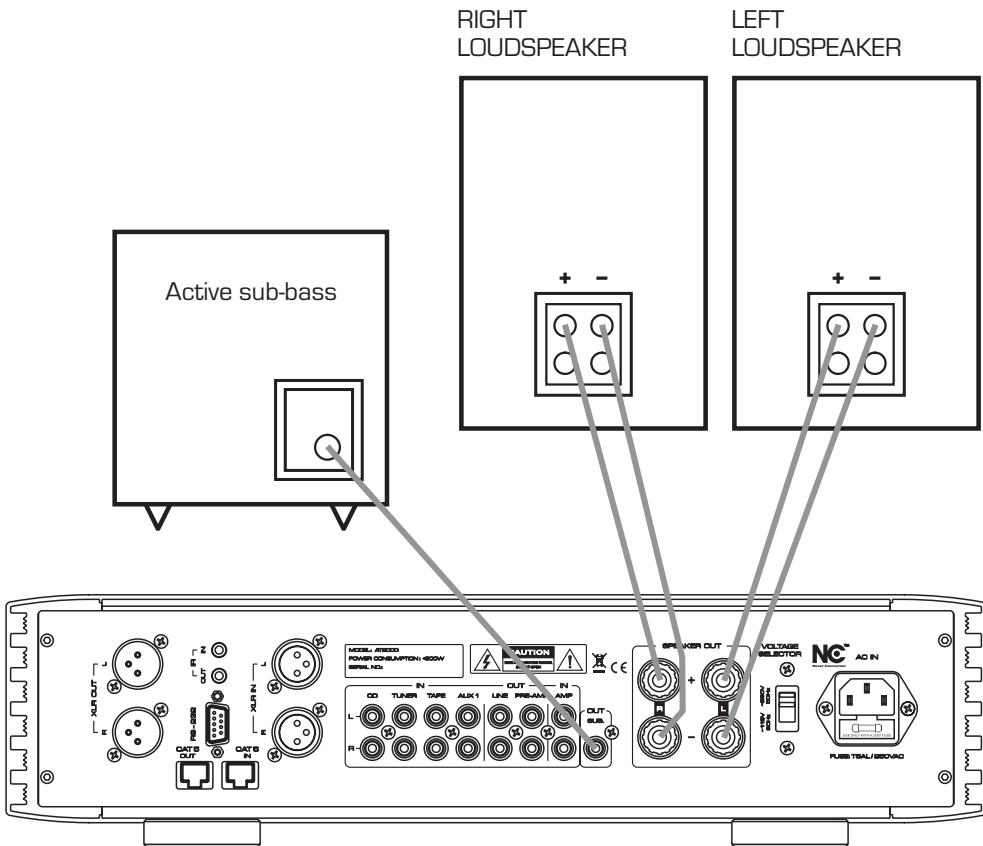


6.2 Active sub-bass output, 2.1 operation.

The AT2000 2.1 option allows you to use smaller stand or bookshelf speakers with an additional active bass unit, from a single RCA (phono) output socket. The stereo signals are combined and buffered, again powered from the Never Connected™ supply, offering the best low frequency audio source.

2.1 audio is useful if you wish to combine your audio with your TV set up. In this configuration, small (high quality) bookshelf or stand mount speakers are placed either side of the TV screen and a floor standing active sub-bass is used to 'fill in' the lower frequencies and can be placed in a discrete position in the room.

Stereo speaker configuration with sub-bass (2.1 operation) illustration Figure 4



6.3 Second / third room operation.

The AT2000 design allows you to operate your high quality main room source equipment in a second room - through a second AT2000 amplifier, up to 100 meters (300 feet) away. Our design approach ensures the highest quality sound and operational flexibility in your second room.

Indeed, it is possible to supply music from your main listening room to two additional rooms, if so required, without any additional control components, just additional AT2000 and cables.

It is also possible to play from additional sources locally in the second/third rooms, such as an iPod, CD or record player, independently from the first room sources, if so desired.

Control signals between the master room and second room amplifiers use InfraRed (IR) code, sent through a data cable connection between the master room and remote room AT2000's to operate the source components.

All source components can be operated remotely in this way. It should be noted that second room sources, such as CD players, tuners, and internet or satellite audio streaming devices will need to be fitted with IR control electronics to enable functionality in the second room.

Astin Trew source components, along with most other manufactures products do work from a remote IR controller. Some source equipment, such as record decks, do not (normally) have this functionality. They can however still be selected and played through to the second room system.

When using an AT2000 in a second (or third) room, the 'rem' button on the front fascia, or 'R/S' button on the remote control should be activated. When activated, an orange LED illuminates to show this function. The AT2000 in the master room is then connected and controlled through the IR data cable from the second room remote controller.

By using an IR link cable from the AT2000 to a suitable CD player, like the AT3000 or AT3500 in the main room, it can be controlled in the second room, by the hand held remote controller, offering track selection, play/pause and all other CD functions available.

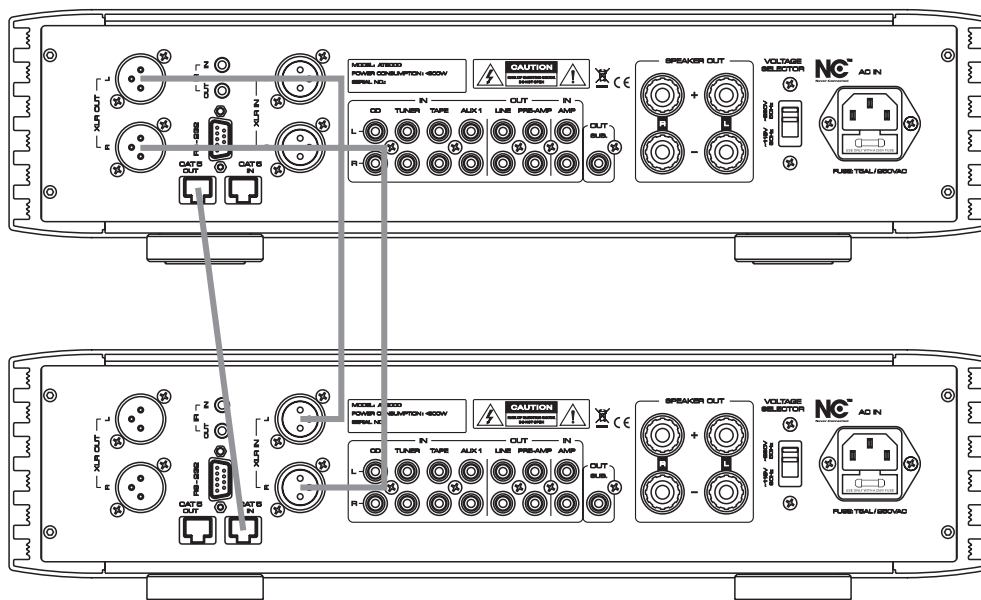
Highest quality second room audio.

For very high 'audiophile' quality second room audio, professional audio quality balanced XLR terminated cables are recommended, up to 100 Mtrs. in length. A data cable for IR control of the source components in the master room is also required. The audio circuitry running the balanced audio signals is driven from a Never Connected™ power supply, offering the highest quality sound from your source equipment.

Note: Balanced pre-terminated XLR cables are available from Astin Trew. See our web site www.astintrew.co.uk or price list. Your dealer will discuss these options with you when you purchase your second room amplifier.

Second room, highest quality audio illustration Figure 5

MASTER ROOM AT2000 AND SOURCE COMPONENTS
(CD PLAYER, TUNER, STREAMER, RECORD DECK ETC)



SECOND ROOM WITH ADDITIONAL AT2000 AND LOUDSPEAKERS

Audio through 'data' cable to second or third room.

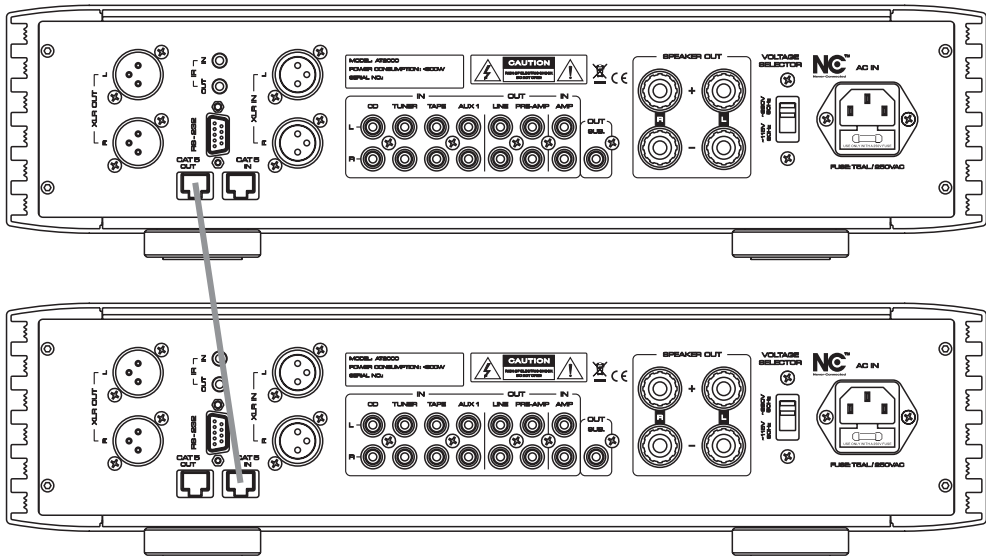
This is a cost effective alternative to the highest audio quality option. An ideal solution if you require second or third room audio using smaller bookshelf or wall mounted speakers for high quality, but occasional or less critical listening.

Good quality [CAT5 type, RJ45 terminated] data cable with very low or no skew characteristics, designed for professional A/V use is recommended, to maintain high audio quality signals. The cable has a small diameter [4-5mm typically] and is flexible enough to be routed inconspicuously through the home. The audio circuitry running balanced audio through the CAT5 type cable is identical to that used for the 'audiophile' option, and is also driven from Never Connected™ supplies, offering a very high quality sound from your source equipment, up to 100 Mtrs. distant.

Our experience suggests that the CAT5 A/V cable option is very good; but not as good as using professional balanced signal cable through the XLR connector option. We supply both cable types, to length and terminated. See web site www.astintrew.co.uk and price list for further details.

Second room, RJ45 audio link illustration Figure 6

MASTER ROOM AT2000 AND SOURCE COMPONENTS
(CD PLAYER, TUNER, STREAMER, RECORD DECK ETC)



SECOND ROOM WITH ADDITIONAL AT2000 AND LOUDSPEAKERS

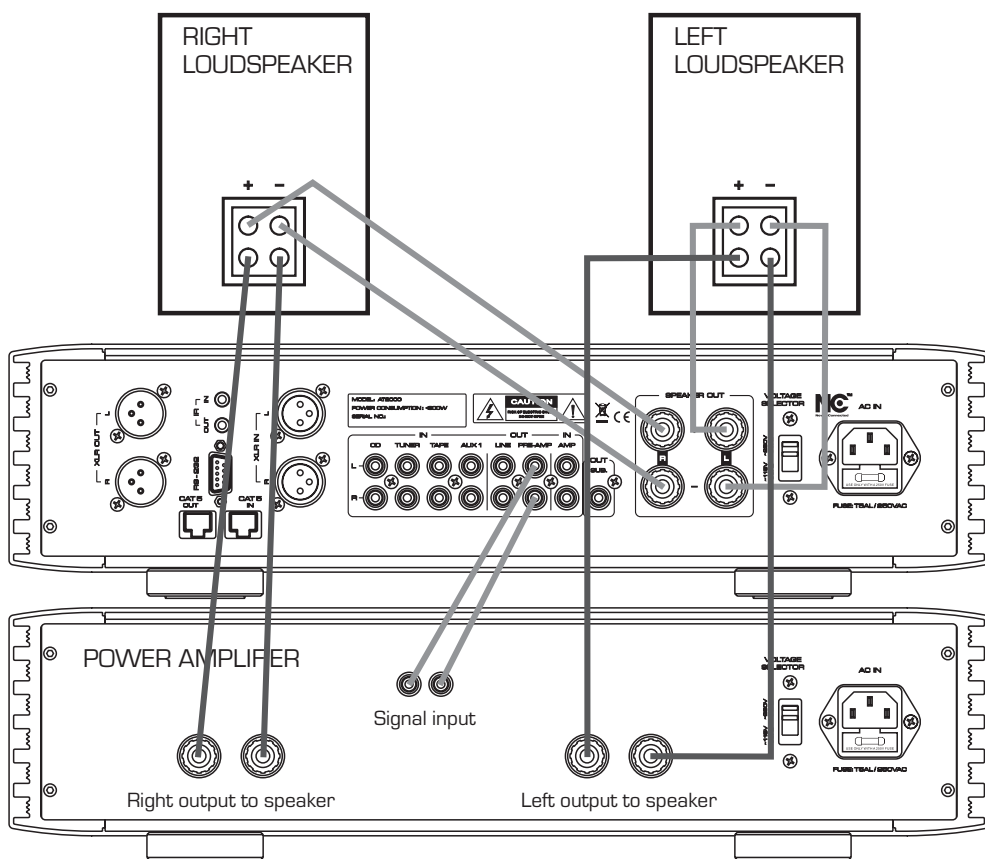
Multi-room connections.

By connecting the AT2000 amplifier through a multi-room distribution system, either controlled by an IR link or RS232 data bus, the AT2000 can become part of a smart home integrated A/V system.

6.4 Pre-amplifier output, for bi-amping.

Bi-amping of loudspeakers is known to offer increased fidelity, normally perceived as deeper and more articulate bass, better sound staging and generally a cleaner and more dynamic sound. Bi-amping also increases the total power available to the loudspeakers. To bi-amp, you will need an additional power amplifier of the same quality and power output as the AT2000. The AT5000 power amplifier is ideal, having identical sound characteristics to the AT2000. If you are unsure whether your loudspeakers can be bi-amped, check this with your dealer or the loudspeaker manufacturer.

Pre-amplifier output for bi-amping illustration Figure 7





6.5 Line level output for recording, or monitoring.

The line level RCA (phono) output allows you to connect the amplifier to a tape recorder and/or monitor connection, or analogue to digital converter.

6.6 XLR and RCA (phono) inputs to pre-amplifier.

The AT2000 has 1 pair of XLR balanced, one pair of RJ45 and 4 pairs of RCA (phono) signal input sockets, allowing up to 6 source components to be connected at the rear of the unit. There is also a 3.5mm jack socket on the front fascia, for an iPod or other MP3 device input. These are selected from the input source selection switches on the front fascia or from the remote control 'Input' button supplied. The XLR balanced input circuitry design is powered from the Never Connected™ supply and offers extremely good noise rejection over very long cable lengths.

6.7 XLR output

Used for the highest quality second room audio signal option. From the master room amplifier; to the XLR input on the AT2000 in the second room.

6.8 Input direct to power amplifier.

RCA (phono) input, direct to power amplifier. This feature allows any source audio device with its own volume controlled output to be used directly with the power amplifier stage in the AT2000. Example: Ideal for integration into multi-channel A/V systems, offering two power amplifier channels for the front stereo pair. Can be switched on or off from front fascia button or remote control.

6.9 Infra Red control cables for remote control of source components.

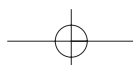
InfraRed (IR) modulated commands can be received and transmitted to and from the AT2000, allowing source components to be controlled remotely, through cables rather than being operated with the IR hand controller. The IR input and output sockets are situated on the rear panel.

6.10 RS 232 bus control.

The AT2000 can be operated remotely through a 9 pin RS 232 bus connection, compatible with Crestron/AMX controllers. Further technical data can be found in the technical datasheet AT2000 downloadable from the Astin Trew web site, www.astintrew.co.uk.

6.11 Headphone and ear bud sockets.

The AT2000 offers a choice of socket outputs, for headphones or ear buds (earphones), with 6.4mm and 3.5mm stereo jack sockets, situated on the front fascia.



7 Operation and remote control.

7.1 Front fascia controls.

Refer to: **front fascia illustration, figure 1**

Power on-off switch Illuminates a blue LED when on. When switched on, the output is automatically muted, preventing loudspeaker 'thumps' whilst powering up. During this period, the 'power on' LED flashes on and off.

Headphone and earphone output jacks. Other outputs are muted when jacks are inserted.

Rotary volume control is used in conjunction with the display in the window to the right of the control to display the volume setting. When switched off, the volume level setting at that time will be returned to when switched on again.

Display brightness (disp.) Offers two brightness levels and display off. Some people believe that the best audio performance is had when displays are switched off. Because we use the Never Connected™ supplies, we do not hear any difference, but the option is offered.

Remote sourced inputs (rem.) is switched on second room amplifier when operating the master room amplifier.

Power amplifier input (p.amp input) switches off signals from the pre-amplifier and connects the power amplifier stage to 'amp in' input RCA connectors (see figure 2, item no.13).

Mute will mute output. Display will show 'mute' when switched on.

Source input selection (input) offers 7 line level inputs (RCA unless stated), selected by pressing the 'input' buttons on the fascia or the 'PRE-AMP INPUT' button on the remote control. The display above the input select buttons indicates the selected input in use.

CD TUNER TAPE AUX 1 AUX 2 (XLR) RJ45 MP3 (3.5 stereo jack)

Note: When 'second room' mode is selected (rem), the source inputs selection (on the fascia) does not function, as the unit is connected to and controlling the master room AT2000 amplifier from the second room remote control through the data control cable.

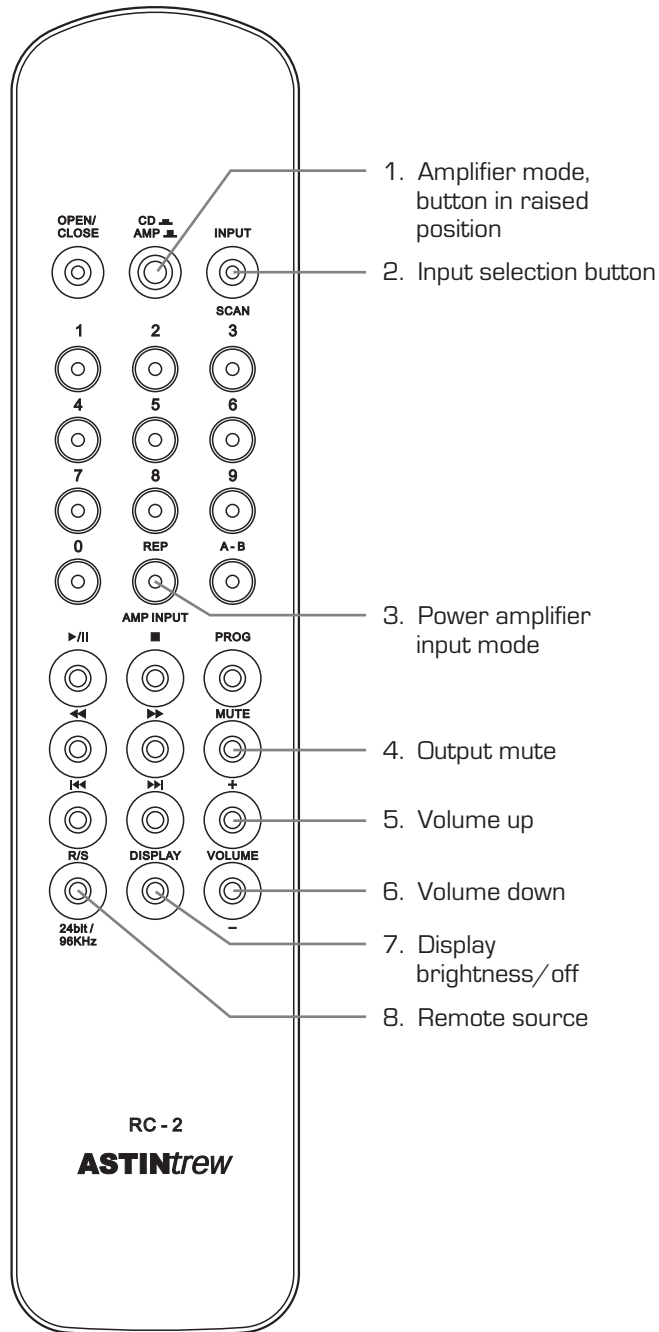
7.2 AT2000 Remote controller

Batteries (2 x AAA) are supplied. Fit into hand controller by referring to the line drawing in the battery compartment.

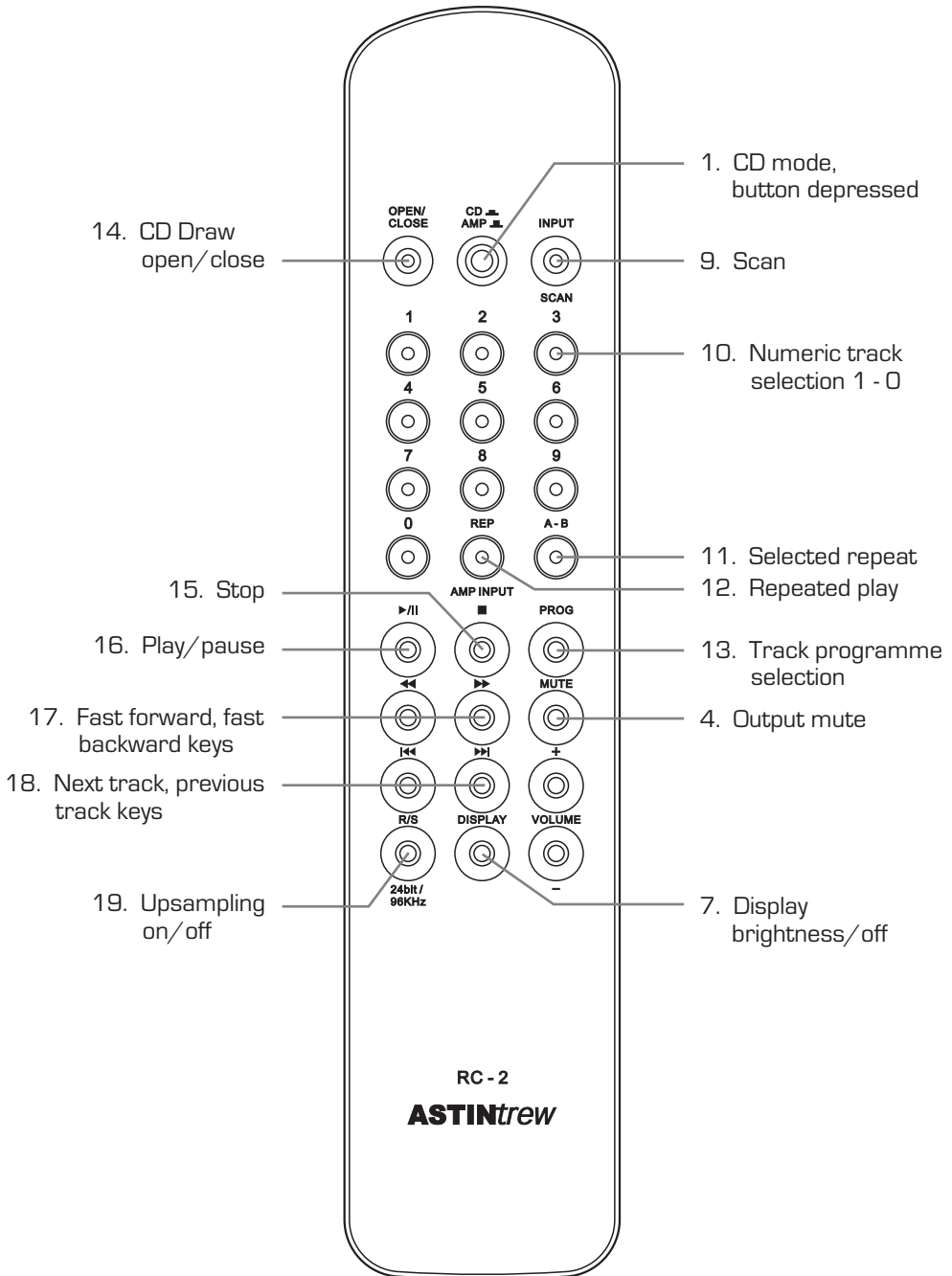
Input selection, along with all other control functions, except mains power on/off, can be made through the hand held remote control unit supplied with the AT2000.

As well as controlling the AT2000, the RC2 hand controller supplied with the AT2000 will also control Astin Trew AT3000 and AT3500 CD players.

AT2000 Remote controller, in AT2000 amplifier mode illustrationFigure 8



AT2000 Remote controller, in AT3000/3500 CD player mode illustration Figure 9



Numbers in brackets refer to those numbers on the illustrations in figure 8 and 9. Refer to these illustrations when reading the following descriptions.

(1) CD or amplifier mode. When button is raised, it operates in amplifier mode (figure 8) and when depressed, operates CD players (figure 9). Some functions work in both modes.

(2) Input selection. Press to select next input, Input selection is shown on the fascia display.

CD TUNER TAPE AUX 1 AUX 2 (XLR) RJ45 MP3 (3.5 stereo jack)

(3) AMP INPUT switches off signals from the pre-amplifier and connects the power amplifier stage to 'amp in' input RCA connectors (see figure 2, item no.13).

(4) Volume mute. Mutes the output.

(5,6) Volume up and down.

(7) Display. Brightness of display, two levels and off.

(8) R/S. Remote switching of second room amplifier.

Figure 9 shows functions to operate CD players. These are described in detail in the Operations Manuals supplied with the Astin Trew CD player.

8. Valve and internal fuse replacement.

Replacing or substituting the valves, or replacing the internal fuses, in the unlikely event of failure, can be carried out by your dealer or distributor. If you attempt to replace either component, the following instructions must be adhered to.

Note: dangerously high voltages are present inside the unit, when powered from the mains supply, that can kill.


NEVER open the amplifier when attached to the mains supply.

A. Disconnect the amplifier from all equipment and the mains supply. Place on a table or workbench with plenty of space around the amplifier.

Caution: Wait 1 hour before opening cover to allow the valves to cool and the capacitors to discharge.

B. Undo the 10 x Alan screws in top plate with key provided. Put the screws somewhere safe.

C. Remove the top plate, place face up, in a safe place. You are now ready to replace the valves or the fuses.



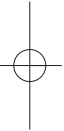
Valve replacement. We recommend the valves are replaced every 20,000 hours. This is conservative and perhaps represents a two thirds the life expectancy for these valves in this design.

This amplifier is designed to use the ECC82 (12AU7) valve only. This common valve type will not go out of production in the foreseeable future. There are a number of manufacturers offering this valve. Spare Astin Trew valves can be purchased through your dealer or distributor.

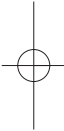
As a guide, using this amplifier four times a week for an average four hours a session, for 48 weeks a year, we would recommend you change the valves every 20 years. If you leave your equipment switched on all the time, then we would recommend changing them every 30 months (two and a half years).

Changing valve: Valves run HOT when in use, but will not burn you. Wait an hour after switching off the amplifier before changing the valves so they are cold.

The valve holders are attached to the printed circuit board, and the spring terminals that hold the valve pins are strong, so care has to be taken not to damage the board or valve when removing or replacing them.



Do not pull all push the valve straight into / out of the holder. This could bend the circuit board and may result in damage. The correct way to remove / insert a valve is to pull / push gently, whilst rocking slightly in a circular way (do not twist).



When inserting a valve, first ensure the pins are not bent on the valves. Locate the pins onto the valve holder correctly by aligning the 'spacing position' on both valve and holder.

Changing the internal fuses: The fuse holders and fuses are located on the circuit board. Only replace it with 20mm glass fuses, as indicated on the printed circuit board. The correctly rated fuses should be purchased through your Hi Fi dealer.

When finished, ensure no items such as tools or other parts are left in the amplifier, replace the top plate, noting the front and back screw positions are different, re-fit all 10 Alan screws. Take care not to over tighten and damage the screw head or key.

9. Troubleshooting

If the amplifier fails to work or you suspect it's not working properly, first check all connections to and from the amplifier. Check all the simple and obvious things first: power supply is on at wall, sourced components are switched on and working, Interconnect and loudspeaker cables are fitted and secured both ends.

Below are some common problems, with suggestions for the possible cure. The list is not exhaustive. If you cannot resolve the problem yourself, please consult your appointed Astin Trew dealer or distributor.

Check all power switches are on and power cable is secure in the back of the amplifier. Remove power cable from the amplifier and check the Mains fuse, located in the Mains input socket moulding.

No output:

Check there is a signal to the power amplifier. Re-check cable connections to the loudspeakers.

No output from one circuit:

Check all signal cables for that channel. Remove power cable from amplifier and check internal fuses, adhering to the instructions given in section 8.

Audible hum:

Check the components earthing in your hi-fi system. Discuss with your dealer or supplier.

10. Specifications

Designation:

AT2000 integrated amplifier.

Stereo Power output:

At 240VAC input	70 W RMS per channel at 8 ohm,	95W at 4 ohm
At 230VAC input	65 W RMS per channel at 8 ohm,	85W at 4 ohm
At 115VAC input	65 W RMS per channel at 8 ohm,	85W at 4 ohm

Power supplies:

Low Noise and shielded Toroidal transformer offering 330VA. Pre-amplifier and all other low power audio sections run from Never Connected™ power supplies to offer the best isolated and cleanest supply.

Frequency response:

+ - 0.5 db 20-30,000 hz

Total harmonic distortion: 0.1

(Characterised by even harmonics that are not audible)

Input sensitivity: 370mv

Input impedance: 47K ohm

Signal to noise ratio: 95db A weighted

Valve:

1 x ECC82 (12AU7) per channel
(20,000 hrs recommended replacement period)

Note: Output devices can withstand short-circuit indefinitely, but not recommended.

Mains voltage: switched.

220-240V at 50Hz (factory set)
110-120V at 60Hz set switch on rear panel.

AT2000 Dimensions:

W 430mm D 397mm Ht. 110mm inc. feet.

Boxed weight: 12.2 Kg

Astin Trew reserves the right to make improvements or changes which may result in specification or feature changes without notice.

11. Spares, cables for multi-room connectivity.

Astin Trew offer a range of audio and Infra-red signal cables to allow straight forward multi-room installation. See our web site or ask your dealer for further information.

12. Guarantee

A two year guarantee is given and is valid from the date of purchase, against any defect in materials or workmanship. Retain your receipt as proof of purchase. All claims should be made through your dealer or distributor under this guarantee.

The two year guarantee excludes:

- A. All damage caused by accident, misuse, neglect, incorrect installation, adjustment, non-authorized repair, servicing or valve replacement.
- B. The valve.
- C. Liability for damage or loss during transit from the retailer or purchaser back to Astin Trew or its authorized agent for the purposes of repair or inspection.

Carriage costs to Astin Trew will be borne by the consignor.

If the returned equipment is found not to be faulty, Astin Trew reserves the right to make a charge for both the examination and the return carriage.

In the event of a failure, neither Air Audio Ltd. t/a Astin Trew or its dealer or distributor shall be liable for any injury, loss or damage caused to property or products other than the product under warranty.

This guarantee does not effect your consumer rights under English law.

13. CE, RoHS and WEEE

All Astin Trew products comply with CE regulations.

All Astin Trew products comply with the RoHS Directive (EU).

All Astin Trew products should be disposed of after use in accordance with the WEEE Directive (EU).



14. Architectural / Engineering description for specifiers.

Amplifier reference:

Astin Trew AT2000 high definition multi-room stereo amplifier.

The amplifier shall be of integrated type, with pre-amplifier and power amplifier (capable of delivering 2 x 65W RMS / 8 ohms per channel); with switching to enable either pre-amplifier or power amplifier to be used separately. There will be a 110/115VAC or 220/240VAC mains input voltage selection switch. The amplifier will use 'never connected'TM power supplies to offer very high quality stereo amplification.

The amplifier shall offer RCA (phono), XLR balanced and RJ45 balanced inputs, and outputs, for audio signals. It shall have infra-red (IR) control capable of working through 100Mtrs. of cable, to supply further amplifiers with IR control; and audio signals through either CAT5 A/V or pro-audio balanced cables, XLR terminated, to feed additional amplifiers up to 100Mtrs, distant. It shall also have an RS232 bus connection.

The amplifier shall include fuse protection for overload and short circuit conditions; it will have rugged anodised protective aluminium casework with ample heat sinking for reliable long term use, and offered with either silver or black fascia colour.