

Introduction

The Arcam Delta 110 pre-amplifier and its matching power amplifier, the Delta 120, have been designed to meet the requirements of the most demanding listener. Combining excellent sound quality with modern but restrained styling, the Delta 110 and 120 will provide the heart of any high quality sound system.

The Delta 110 pre-amplifier has five switchable analogue inputs. These accept signals from a turntable, tuner, two tape inputs and an AV component, such as a stereo VCR or the Arcam Delta 150 Nicam stereo TV tuner.

The Delta 110 also has two digital inputs which accept the signal directly from the digital output of a compact disc player, such as the Arcam Delta 170 transport, or DAT player.

The switching system of the Delta 110 offers separate 'listen' and 'record' functions, allowing the user to listen to one programme at the same time as recording another from an entirely separate source.

To increase further its versatility and ease of use, the Delta 110 is provided with an infra red remote control handset, which operates the input selection, mono, mute and volume controls.

Please study this manual carefully to ensure that you get the best results from your pre and power amplifiers. Remember your dealer is there to help you. He has full technical and service information for all Arcam products and considerable experience of their use in a variety of systems. If, however, he is unable to answer your query, then do not hesitate to contact us here directly.

Installing and using your Delta 110 pre-amplifier

Mains Supply

The Arcam Delta 110 may be supplied to work on any of the following AC voltages: 110V/220V and 120V/240V (100V units can be supplied to special order). Check that your local mains supply voltage agrees with the voltage setting indicated on the back panel of the Delta 110. If not, please contact the factory or your national distributor for details of how to proceed further.

A detachable mains lead is supplied with the Delta 110. The cores of this lead are coloured in accordance with the following code:

Green and yellow – Earth
Blue – Neutral
Brown – Live

Note: Export units for certain markets have moulded mains plugs fitted as standard.

As the colours in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured green and yellow must be connected to the terminal on the plug which is marked by the letter E or to the safety earth symbol, or to the terminal coloured green or green and yellow. The wire which is coloured blue must be connected to the terminal which is marked by the letter N or coloured black or blue. The wire which is coloured brown must be connected to the terminal which marked by the letter L or coloured red or brown.

Fuses

If the mains plug is fused, fit a 3 amp fuse.

The AC supply inlet to the Delta 110 uses a standard IEC chassis mounting plug.

The IEC line socket on your mains lead and the IEC plug on the Delta 110 are a tight fit; before first using the Delta 110 it is therefore important to ensure that the socket is firmly pushed home into the chassis plug.

Under no circumstances should the Delta 110 cover be removed unless the supply is disconnected at the wall socket.

Notice

1. Please retain the carton and all packaging materials provided with this equipment so that it may be repacked correctly if it ever becomes necessary to transport the unit or to return it for service.

2. If servicing is required then the equipment should be properly packed and returned to the dealer from whom it was purchased. It is essential to include a covering letter giving your name and address and a brief but thorough description of the fault.

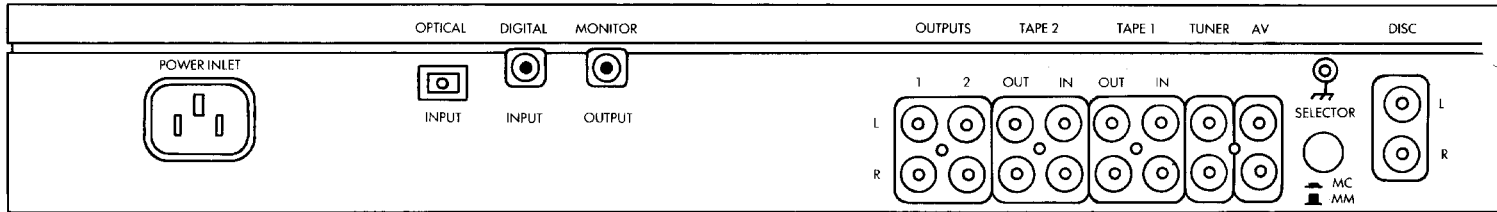
Connections and warming up

There are two points that should be noted before using your Delta 110.

Firstly, it is advisable that your system is switched off before connecting it up to the Delta 110. This will avoid possible damage to your loudspeakers. At the very least ensure that the volume control on the amplifier is turned down, or an unused input is selected.

Secondly, although the Delta 110 will play music within seconds of switching on, in common with other audiophile products its internal circuits take some time to stabilise fully. We have found that the very best sound quality may not be obtained until the unit has had some time, possibly up to twelve hours or more, to warm up.

Rear panel connections



All analogue audio inputs and outputs are via RCA phono connectors. All the phono sockets on the Delta 110 are marked 'L' for the left channel and 'R' for the right channel, with the left channel nearer the top of the cabinet. Your connecting leads will be marked either 'L' or 'R', or will have a white or black plug for the left channel and a red plug for the right.

Disc input

For the purposes of playing records, the Delta 110 can accept both moving magnet and moving coil cartridges. For either type of cartridge, the plugs on your turntable lead should be connected to the disc input sockets on the rear panel of the unit. A switch just to the side of these sockets allows the selection of either MM or MC input. The switch should be left out for use with MM and high output MC cartridges, and depressed for use with low output (normal) MC cartridges.

If your turntable has a separate earth lead then this should be firmly attached to the earth terminal to be found on the rear of the amplifier, just above the MM/MC selector.

Note

Never operate the MC/MM selector on the rear of the amplifier with the volume control turned up, as the resultant electrical surge may damage your loudspeakers.

A/V input

This is a line input of 200mV sensitivity. It is suitable for use with many A/V and normal audio products, such as the Arcam Delta 150 Nicam Stereo TV tuner, the audio output of a VCR, or the analogue output of a CD player or laser disc player.

Tuner input

The tuner input is suitable for use with almost any AM or FM tuner. Connect your tuner to the pre-amplifier using the phono sockets marked 'tuner'.

Tape inputs/outputs

The Delta 110 has the facility to connect two tape recorders, and is suitable for use with almost any cassette deck, open reel deck or stereo VCR.

1. Connect the 'record' (or 'line in') sockets of your tape deck to the phono sockets marked 'out' on the rear of the Delta 110, using phono-phono leads.

2. Connect the 'playback' (or 'line out') sockets of your tape deck to the phono sockets marked 'in' on the rear of the Delta 110, using phono-phono leads.

Outputs

The Delta 110 is equipped with two identical line outputs compatible with power amplifiers requiring inputs in the range of 500mV to 2V for full power output.

Both pairs of outputs may be used simultaneously if required.

The outputs are short-circuit proof, and are also automatically muted at switch-on and switch-off.

The output impedance of the Delta 110 is sufficiently low at 25 ohms to allow for runs of audio cable up to about 20 metres to be used without any serious degradation of sound quality.

Note

A pair of good quality pre to power amplifier interconnect cables is provided as standard with the Delta 110, but please refer to 'Connecting cables' on page for further information on this important topic.

Digital inputs

The Delta 110 incorporates an advanced Push-Pull Bitstream digital to analogue converter.

This will accept the digital output signals from compact disc players or domestic DAT recorders that conform to the S/PDIF standard (Sony/Philips digital interface). Optical and 75ohm co-axial inputs are provided. Both inputs will switch automatically between the CD sampling rate (44.1kHz) and the DAT sampling rate (48kHz).

Both 75ohm co-axial and Toslink type optical interconnects of approximately 0.75m length are supplied. These make connecting your CD player or DAT player to the Delta 110 very straightforward.

If longer cables are required, they should be of the correct type – for example, regular audio phono-to-phono cables are generally

not suitable. A 75ohm co-axial (aerial or video) cable terminated with phono plugs should be used.

We particularly recommend AudioQuest video cables (Video X and Video Z) obtainable from your Arcam dealer or, in case of difficulty, directly from the factory in the U.K.

Digital monitor output

The digital monitor output is a phono-type co-axial socket which provides an exact duplicate of the digital input selected on the front panel.

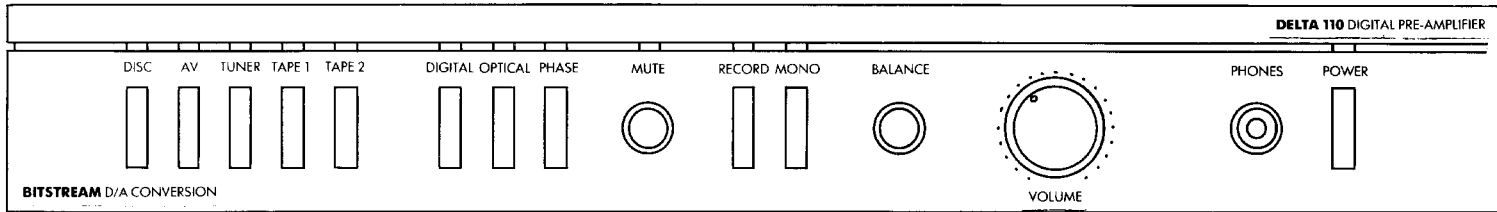
For example, if the co-axial input is selected, and it is connected to your CD player, that digital signal can be fed via 75ohm co-axial cable into the digital input of a DAT player in order to record (assuming that the DAT player is compatible with the 44.1kHz sampling rate).

The digital monitor output can also be used to 'daisy chain' a digital signal to a further outboard D/A converter or digital processor.

Note

Because the digital monitor output socket duplicates an input signal, it cannot change the sampling frequency i.e. a 44.1kHz input is sent on as a 44.1kHz signal.

Front panel controls



Mains power switch

The Delta 110 is turned on by depressing the power switch. The small LED (light emitting diode) above the switch will glow green. After a second or two, you may hear a gentle click from inside the pre-amplifier. This indicates that the various signal switching and muting relays are taking up their correct settings, and that the unit is ready for use.

To turn off the Delta 110, depress the power switch again, so that it unlatches. The LED will go out.

Standby mode

When the Delta 110 is switched off with the remote control handset, it is in the 'standby' mode.

In 'standby', the 'listen' and 'record' selectors are dis-engaged. All LEDs are extinguished (except the power LED) and the audio output is muted.

We recommend leaving the Delta 110 in the 'standby' mode when not in use, in order to obtain the best possible sound quality when switching on again.

Input selection

Function selection of all the Delta 110's seven inputs is carried out by microprocessor control with one-touch push buttons. Status is indicated by a row of LEDs, one above each control button.

This technique enables the Delta 110 to be operated via its infra-red remote control handset if required.

The system permits separate 'listen' and 'record' functions, allowing one input to be listened to, whilst another input is being recorded.

By connecting an integrated amplifier (and a pair of speakers) to one of the Delta 110's tape outputs, any source selected with the 'record' button on the Delta 110 will be routed through to the integrated amplifier, making a very simple, but practical and affordable multi-room system.

Listen function

Select the input you wish to listen to by depressing the relevant button, i.e. disc, AV, tuner, tape 1, tape 2, co-axial digital or optical digital.

The selected input signal is then routed to the pre-amplifier's main outputs and headphones socket.

The LED above the selected input will glow green. Do not attempt to push more than one button at a time.

Adjust the volume as required.

Record function

See page 9 for full details on tape recording and dubbing.

The 'record' button is used to select the source required for recording. The signal is routed to both tape outputs, which are compatible with cassette decks, open reel decks, hi-fi stereo VCR's or the analogue inputs of DAT recorders.

The 'record' button acts rather like a shift key on a computer or calculator. When it has been depressed, the red LED above the 'record' button will flash for approximately 5 seconds. While the LED is flashing, any of the 7 function buttons may be selected, to determine which input is to be recorded (i.e. routed to the tape outputs). The LED above the selected input will now glow red.

Notes

1. Because the Delta 110 incorporates only one set of digital to analogue converters (DACs), it is not possible to listen to one of the digital sources whilst recording the other.

2. If you have chosen to record from the same source that you are listening to, for instance 'tuner', the LED above the 'tuner' input will simply glow green and no red LEDs will be visible above the input buttons. If you then select another input to listen to, for instance 'disc', the LED above the 'tuner' input will now glow red, to indicate that the tuner is being recorded, and the LED above the 'disc' input will now glow green, to indicate that a disc has been selected to listen to.

Phase switch

This is an absolute phase reversal switch which operates on the co-axial and optical digital inputs only. Its use is not essential as the difference in sound between the two positions is normally small.

However, it does give the more enthusiastic listener the opportunity to achieve optimum results.

Due to the electronic complexity of the recording process, some CDs are produced with absolute phase inversion and can sound better when phase reversed. For example, a drum sound which should be reproduced by the forward motion of your loudspeaker diaphragms, when phase inverted becomes a signal which moves them backwards. The phase switch allows you to correct this reversal.

Normal phase reproduction is achieved when the LED above the phase switch glows green. For absolute phase reversal push the phase switch once, and the LED will glow red. A second push will cause the system to revert to the normal position again.

The switch position for a particular recording should be determined by listening. We suggest that by colour coding your CDs to match the phase switch LED, you can have easy reference to preferred switch settings in future.

Note that the phase LED will only be illuminated when one of the digital inputs is selected, for either listening or recording.

Mono

The Delta 110 is in its normal stereo mode when the LED above the mono button is not illuminated. Then the left and right input signals are amplified independently to feed the corresponding main outputs and stereo headphones jack socket.

When the mono button is depressed, the LED above it glows green. The left and right signals are then mixed together and the combined signal is routed to the main outputs and headphone socket. This is particularly useful when listening to mono records or tapes (as much of the low frequency out-of-phase rumble can be eliminated) or to remove excessive hiss from weak FM broadcasts. It is also invaluable for checking speaker phasing in a stereo hi-fi system.

Depressing the mono button a second time will restore the system to stereo operation.

Balance control

This is set so that in the normal ('12 o'clock') position the left and right signals are amplified equally. Adjusting the balance control anti clockwise will then move the stereo image to the left; moving the control clockwise moves the image to the right.

For optimum performance the balance control is inside the feedback loop of the Delta 110's line amplifier stage. As the control's range is limited to approximately ± 10 dB, it is not possible to mute one channel completely.

Volume control

This adjusts the listening levels of the left and right channels together, through both loudspeakers and headphones. Note that neither the volume or balance controls affect the level of signals sent to the tape outputs.

The volume control is motorised for remote control (see p 10). The special clutch used allows it to be adjusted manually without any risk of damaging the drive motor. However, take care not to force the volume knob beyond its end stops (at approximately 7 o'clock for minimum volume and 5 o'clock for maximum).

Headphones socket

The Delta 110 incorporates its own high quality headphone amplifier which is suitable for both high and low impedance headphones using a standard $\frac{1}{4}$ inch (6.35mm) jack plug. It is not generally suitable for use with electrostatic headphones.

Note that the Delta 110's two main stereo outputs are automatically muted when the headphone jack is pushed home.

Tape recording

Tape recording

The Delta 110 is extremely versatile when using tape recorders, allowing you not only to record from one source but also to listen to another source at the same time.

Both sets of tape sockets ('tape 1' and 'tape 2') are identical in function and suitable for use with almost any type of recorder (cassette, hi-fi VCR, reel to reel, DAT, etc.).

Connecting up

Connect your tape recorder to the 'tape 1' sockets, using the 'in' sockets for playback and the 'out' for record. A second machine may be connected to the 'tape 2' sockets in the same way, if required.

Recording ('tape 1')

Any input signal available on the Delta 110 may be routed to the 'tape 1' output sockets by using the 'record' button to select the appropriate input, as described on page 7. Set your tape recorder into its recording mode and this input will be recorded. Selecting the same input to listen to will not affect the signal sent out to the recorder and will now enable you to listen to the input being recorded.

If your tape recorder is a 3 head design, this will allow A-B monitoring of the actual recording while it is taking place. Switching between the original source and the 'tape 1' button during recording will then allow you to make a true 'before and after' (A-B) comparison.

Playback ('tape 1')

Push the 'tape 1' button and set your tape recorder in its playback mode.

Recording and playback ('tape 2')

Proceed exactly as above, except use the 'tape 2' sockets and 'tape 2' button when monitoring or playing back the recording.

Tape to tape dubbing

The Delta 110 allows 2 way tape dubbing (copying) from 'tape 1' to 'tape 2' or vice versa.

For example, to copy from a recorder connected to the 'tape 1' sockets to a recorder connected to 'tape 2', first push the 'record' button on the Delta 110 and then select 'tape 1'. This routes the 'tape 1' signal to 'tape 2's' output. Then set the second tape recorder into its 'record' mode and the first to 'playback' mode to enable the transfer to take place.

If you wish to listen to this transfer while it is taking place do *not* push the 'tape 1' button to try to listen as this will disable the signal sent out from 'tape 1' to 'tape 2'. Instead, push the 'tape 2' button to listen to the signal routed back to the pre-amplifier via the second tape recorder's own amplifiers.

This logic is built into the control program to avoid tape feedback loops. Therefore, it is not possible to assign both 'listen' and 'record' functions at the same time to either 'tape 1' or 'tape 2'.

If the 'listen' function is already 'tape 1' (or 'tape 2') and the equivalent 'record' function is selected, the command is ignored.

If the 'record' function is already 'tape 1' (or 'tape 2') and the equivalent 'listen' function is selected, then the 'listen' selection will override the 'record', which will be disabled.

Remote control of the Delta 110

The CR20 remote control handset is supplied with the Delta 110. It is powered by 4 x alkaline manganese AAA cells (supplied), which are inserted in the base of the handset. To access the battery compartment, slide the whole bottom panel forwards approximately 5cm (2 inches).

Take care to insert the batteries the right way round. We recommend that the batteries should be removed from the handset if it is not to be used for some time.

Using your CR20 remote control

The CR20 remote handset has a range of about 5 metres, and should always be pointed at the centre of the Delta 110. Take care not to obstruct the remote receiver (located immediately below the mute LED) or the pre-amplifier will not accept the handset's commands.

When using your handset, hold each button down for about 1 second. Do not attempt to press more than one button at a time.

The CR20 allows remote selection of any of the seven inputs, together with the absolute phase of the digital inputs, and mono/ stereo selection.

In addition the CR20 allows the user to adjust the volume control up and down by pressing the 'volume' + and – keys. These activate a small motor behind the volume control; it takes approximately 6 seconds to go from zero to maximum or vice-versa. It is not possible to adjust the balance by remote control.

The mute button reduces the output level of the pre-amplifier by 40dB – when it is activated the mute LED in the centre of the pre-amplifier glows red. This can be most useful when taking telephone calls or answering the front door etc. Pushing the mute button for a second time will restore normal operation.

The red standby button puts the whole pre-amplifier into 'standby' mode. All inputs/outputs are disabled and only the green power LED remains on. Nevertheless, all power supplies remain active, keeping the Delta 110's circuits fully warmed up and ready for use.

All functions may be restored to their pre-standby status by pressing the standby button for a second time.

Notes

1. If the remote control becomes lost or accidentally disabled, it is possible to remove the Delta 110 from its standby or mute modes by briefly switching the unit off and on again with the mains power switch.

2. The 'record' function has been deliberately omitted from the remote control in order to avoid accidental or inadvertent operation.

3. The volume control of the Delta 110 may also be operated by the CR10 remote control handset supplied with Arcam CD players (Arcam Alpha, Delta 70.2 and Delta 170 models). Other handsets that use the Philips RC-5 system may also be compatible.

4. The two unmarked buttons on the CR20 have no function.

Cartridge loading modules

These optional accessories are passive, switchable modules designed to modify the input impedance of the amplifier in order to obtain the best match with the cartridge in use. As the Delta 110 has a single set of disc inputs (switchable to MM or MC via the switch on the rear panel), then two separate loading modules – one for moving magnet (type ULM/M) and one for moving coil (type ULM/C) cartridges – are available on request from your dealer, distributor or the factory. These modules are user adjustable via a series of small switches.

The appropriate MM or MC loading module should be plugged into the amplifier on the pins located close to the disc input (see section – Removal of Top Plate – below). A set of instructions is provided with each module. Care should be taken to ensure that only an MM loading module is used in conjunction with moving magnet or high output moving coil cartridges and that only an MC loading module is used in conjunction with normal (low output) moving coil cartridges.

Under no circumstances adjust the loading module switches when the amp is switched on and the volume turned up as severe damage may occur to your amplifier or speakers.

It must be emphasised that these passive modules have a subtle effect on the sound balance and frequency response. They will have little or no effect on the sensitivity of the amplifier. Most cartridges will perform satisfactorily without any loading module.

Before fitting a cartridge loading module, it is ESSENTIAL to note the precautions detailed below.

Removal of top plate

The installation of a loading module is a straightforward operation provided you follow the instructions. If you are in any doubt, please consult your dealer.

Should you need to install a cartridge loading module, before removing the top plate ALWAYS SWITCH OFF THE AMPLIFIER AND DISCONNECT IT FROM THE MAINS SUPPLY.

Note that the mains fuse remains live whenever the amplifier is plugged into the mains, even when the amplifier power switch is in the 'off' position.

To remove the top plate, unscrew the two black headed screws at the top of the rear panel using a No.1 'Pozidriv' screwdriver. Lift the top plate vertically and pull it backwards slightly to release it. Replacement is simply the reversal of this procedure.

Connecting cables

When dealing with high quality hi-fi systems, such as those based around a unit with the resolving power of the Delta 110, the question of connecting cables becomes of paramount importance. We strongly recommend that only first class loudspeaker and interconnect cables be used with your hi-fi system. We have found interconnect and loudspeaker cables from the AudioQuest range to be particularly suitable. Detailed information on the AudioQuest range of cables may be obtained from your dealer or the factory.

As a rule of thumb you might budget to spend between 5% and 20% of the price of your system on cable. Surprising though it may seem this can be one of the most effective upgrades you can carry out on your system.

We suggest that you discuss the question of interconnect and loudspeaker cables with your dealer.

Check list

Should you have any difficulty in operating your pre-amplifier, check the following before suspecting that a fault has developed.

No power and LED not illuminated. Check that:

1. the mains supply is connected and that the mains lead is fully home in the mains inlet socket at the rear of the amplifier.
2. the mains is switched on and that the power switch on the front panel is depressed and has fully latched.
3. the fuse in the mains plug has not blown and that the mains socket in the wall is live (test with another item/appliance).

Power on and LED illuminated but output from one loudspeaker only. Check that:

1. the output leads are connected into the correct input sockets on the power amplifier.
2. both the left and right channels of the selected source are connected correctly and the input wiring is not faulty (check by swapping over the left and right input connectors). If in doubt contact your dealer.
3. the balance control is positioned at '12 o'clock'.

Loud hum heard through loudspeakers when DISC is selected. Check that:

1. the ground lead from the turntable (if fitted) is connected firmly to the ground terminal on the rear of the amplifier.
2. the amplifier is correctly earthed via the mains lead.
3. your cartridge is not sited directly above your amplifier's mains power transformers (move the amplifier away and check if the hum level changes).
4. other transformers in the vicinity are not radiating into the Delta 110.

Loud hum heard through only one loudspeaker when DISC is selected. Check that:

1. the ground wire is not faulty within the respective channel's lead. This is easily checked by swapping over the leads and checking if the hum moves to the other channel.
2. the headshell leads connected to the cartridge on the respective channel are not faulty or loose. If in doubt please consult your dealer.

Power on and LED illuminated but no output from the amplifier. Check that:

1. the amplifier is connected to the desired input and that the correct input on the amplifier is selected.
2. the output leads are connected to the correct input sockets on the power amplifier.
3. the volume control is not set to minimum.
4. if 'disc' is selected, that the cartridge selector switch is set to the correct type of cartridge. NB. Do not operate this switch with the volume control turned up.
5. if 'CD' is selected, your machine is playing a CD.
6. the pre-amplifier is not in 'mute' or 'standby' modes.
7. headphones are not plugged into the Delta 110, as this automatically mutes the main outputs.
8. if the digital inputs are being used, the output from the digital source is switched on.

Loud hissing and crackling from speakers via digital inputs (possibly with residual audio signal)

1. check the connection between the CD player's digital output and the Delta 110's digital input.
2. if the digital output of your CD player is switchable, ensure the switch is in the 'on' position.

Addendum

The Arcam Delta 110 digital pre-amplifier has been upgraded with the inclusion of a new precision hybrid 18 bit DAC (digital to analogue converter).

This new DAC employs both multi-bit and single bit technology to give outstanding results. To achieve an open and dynamic midrange and treble, multi-bit technology is used for the upper 10 bits. The lower 8 bits use a single bit system for excellent low level resolution.

In addition, the Delta 110 features a clock output for connecting to the Arcam Delta 170.3 CD transport. By installing the master clock in the Delta 110 and the slave clock in the Delta 170.3, jitter is greatly reduced, resulting in sound quality usually attributed to very expensive high end CD players.

Instructions on how to connect the D110 to the Delta 170.3 follow. All other instructions in the manual are unaffected by the inclusion of the new DAC.

Connecting to the Arcam Delta 170.3 CD transport

In addition to the digital connection from the Delta 170.3 to the Delta 110, connect the Delta 110's 'SYNC LOCK' clock output to the Delta 170.3's clock input using a Toslink type optical cable. This method will give the very best sound quality. The Delta 170.3 and the Delta 110 will 'synchronise' automatically.

Technical specification (digital inputs)

Conversion system	Hybrid 18 bit DAC
Upper	10 bits multi-bit
Lower	8 bits single-bit
Sampling rates accepted	32kHz, 44.1kHz, 48kHz
Dynamic range	108dB
Signal to noise ratio (DIN AUDIO)	96dB
Harmonic distortion (0dB)	0.005%

Technical specifications

OUTPUTS

Main outputs

Nominal output level 2V
Output impedance 25 Ω
Reduction in output level when muted 40dB
Noise (CCIR) volume control at zero -97dBV
Crosstalk (any input) <70dB at 1kHz
Distortion (20Hz - 20kHz, 1.0V rms) <0.01%
Maximum output level >8V rms
Minimum recommended load 5k Ω
Channel balance \pm 1dB

Tape 1 and tape 2

Nominal output level 300mV
Output impedance 70 Ω
Maximum output level 5V rms
Minimum recommended load 5k Ω
Crosstalk (any input) <-65dB at 1kHz
Channel balance \pm 0.1dB

Headphone output

Nominal output level 4V
Output impedance 200 Ω
Recommended load range 32 Ω to 2k Ω
Maximum output level 8V
Noise (CCIR) volume control at zero -80dBV
Channel balance \pm 1dB

INPUTS

Disc - Moving magnet cartridge

Sensitivity 2mV
Noise (CCIR) ref 500mV output -64dB
Input impedance 47k Ω
Overload margin at 1kHz 28dB

Moving coil cartridge

Sensitivity 100 μ V
Noise (CCIR) ref 500mV output -50dB
Input impedance 220 Ω
Overload margin at 1kHz 28dB

Av, tuner

Sensitivity 200mV
Noise (CCIR) ref 500mV output -89dB
Input impedance 45k Ω

Tape 1 and tape 2

Sensitivity 200mV
Noise (CCIR) ref 500mV output -89dB
Input impedance 45k Ω

Digital (coaxial/optical)

Output at MSB 3V
Signal/noise (CCIR) 96dB
Distortion <0.01%
Dynamic range 96dB
Channel balance \pm 0.2dB

Frequency response (to main outputs)

Disc +0.2, -0.5dB 50Hz to 20kHz
Line (A/V, tuner, tape 1, tape 2) +0.1, -0.5dB 20Hz to 20kHz
Digital inputs +0.1, -0.5dB 20Hz to 20kHz

GENERAL

Power supply

Normally set to 220/240V AC 50 to 60Hz

May also be wired for 110/120V operation

100V version available to special order

Maximum power consumption 20VA

Meets IEC 65 electrical safety requirements standard

Dimensions

Width 430mm

Height 64mm

Depth 270mm

Weight

gross packed 5.2 kg

nett unpacked 3.7 kg

Guarantee for UK sales

This equipment has been fully tested and a full record of these tests made before despatch from the factory. Both the workmanship and the performance of this equipment are (except as set out below) guaranteed against defects for a period of two years from the date of purchase provided that it was originally purchased from an authorised UK dealer under a consumer sale agreement. (The words 'consumer sale' shall be construed in accordance with Section 15 of the Supply of Goods (Implied Terms) Act 1973.)

The manufacturers can accept no responsibility for defects arising from accident, misuse, wear and tear, neglect or through unauthorised adjustment and or repair, neither can they accept responsibility for damage or loss occurring during transit to or from the person claiming under this guarantee.

This guarantee covers both labour and parts and is transferable to subsequent purchasers but the liability of the manufacturers is limited to the cost of repair or replacement (at the discretion of the manufacturers) of the defective parts and under no circumstances extends to consequential loss or damage.

Claims under this guarantee

This equipment should be packed in the original packing and returned to the dealer from whom it was purchased or, failing this, any other authorised Arcam dealer. If it is not possible to return the equipment by hand, then it should be sent carriage prepaid by a reputable carrier.

Should the original packing not be available, replacement packing can be purchased from the manufacturers. The equipment should not be sent by post.

DO NOT CONSIGN THE EQUIPMENT TO A&R CAMBRIDGE UNLESS YOU HAVE FIRST BEEN SPECIFICALLY REQUESTED TO DO SO BY THE MANUFACTURER'S TECHNICAL SERVICE DEPARTMENT. DO NOT UNDER ANY CIRCUMSTANCES ATTEMPT TO DISASSEMBLE THE EQUIPMENT BEFORE DESPATCH.

If you have difficulty complying with these requirements please contact the manufacturers at the following address.

A&R Cambridge Limited,

Pembroke Avenue,
Denny Industrial Estate,
Waterbeach,
Cambridge CB5 9PB, England.

Telephone: (0223) 440964

Fax (0223) 863384

In either case you should state clearly your name and address, the date and place of purchase together with a brief description of the fault experienced.

In the event of equipment being returned which on test is found to comply with the published specification the manufacturers reserve the right to charge a reasonable fee for testing the equipment and for return carriage.

Enquiries

The manufacturers are happy to answer any queries you may have regarding the use of this equipment on the condition that this enquiry is by letter and a stamped addressed envelope is provided. You should state clearly the serial number of the unit, the dealer from whom it was purchased and the date of purchase.

THIS GUARANTEE IN NO WAY VARIES OR REMOVES A PURCHASER'S STATUTORY RIGHTS.