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Classik-K Product Description Rev 4

A Retailer's guide to the Linn Classik-K

Main changes since Rev1:
Important Information section - Addition of note to clarify non-inclusion of speaker cable kit
Main changes since Rev2:
Important Information section - Added note to state that RS232 control of Classik-K is not possible
Main changes since Rev3:
Important Information section – Added note to state that if a Classik-K is used as a Driver in a Knekt or Connect system, all rooms including the Main-room must listen to the same Main-room source.
Also, added that a Classik-K used as a Receiver in a Knekt system requires the addition of an RCU in all cases. (This information was already included in the 'Multiroom' section, however it was thought necessary to reiterate these important details as they were missed by some users)

C o n t e n t s

Other Classik-K documents available on Linfo Website (http://linfo.linn.co.uk)

- *Product Information Sheet*
- *Owners Manual*
- *CAD Diagrams showing external dimensions*
- *Exploded Diagram, including product parts list*
- *Service Manual – launch version*
- *Classik Tuner re-configuration procedure (for world regions)*

Also available from Linn Marketing – Classik Trade Brochure

Introduction

About the Classik-K

The Classik-K is an independent CD/Tuner/Multiroom amplifier, which replaces the Classik-T in our product range. Since the Classik-T, Multiroom functions ('Connect' and 'Knekt') have been added, as well as a CD-digital output, which allows recording of the Classik's CD player to a digital recording device such as Minidisk.

The '**Connect'** function provides a very simple but extremely effective DIY plug-and-play multiroom system, whereby the output of one Classik–K can be distributed to another one, two, three or four Classik-K's in other rooms in the house (and controlled from those rooms), via simple plug-in connections and cable runs. The term 'Connect', in the sense of multiroom, applies exclusively to a Classik-only system.
The '**Knekt'** function allows the Classik-K to be incorporated into a full Linn Knekt system. This is not a customer DIY option and must be carried out by a trained Knekt installer.
As the audio distribution in both cases is carried via balanced-audio cables, there is no discernable noise or loss of quality at its destination, even over very long cable runs. Cabling information can also be found later in this document.

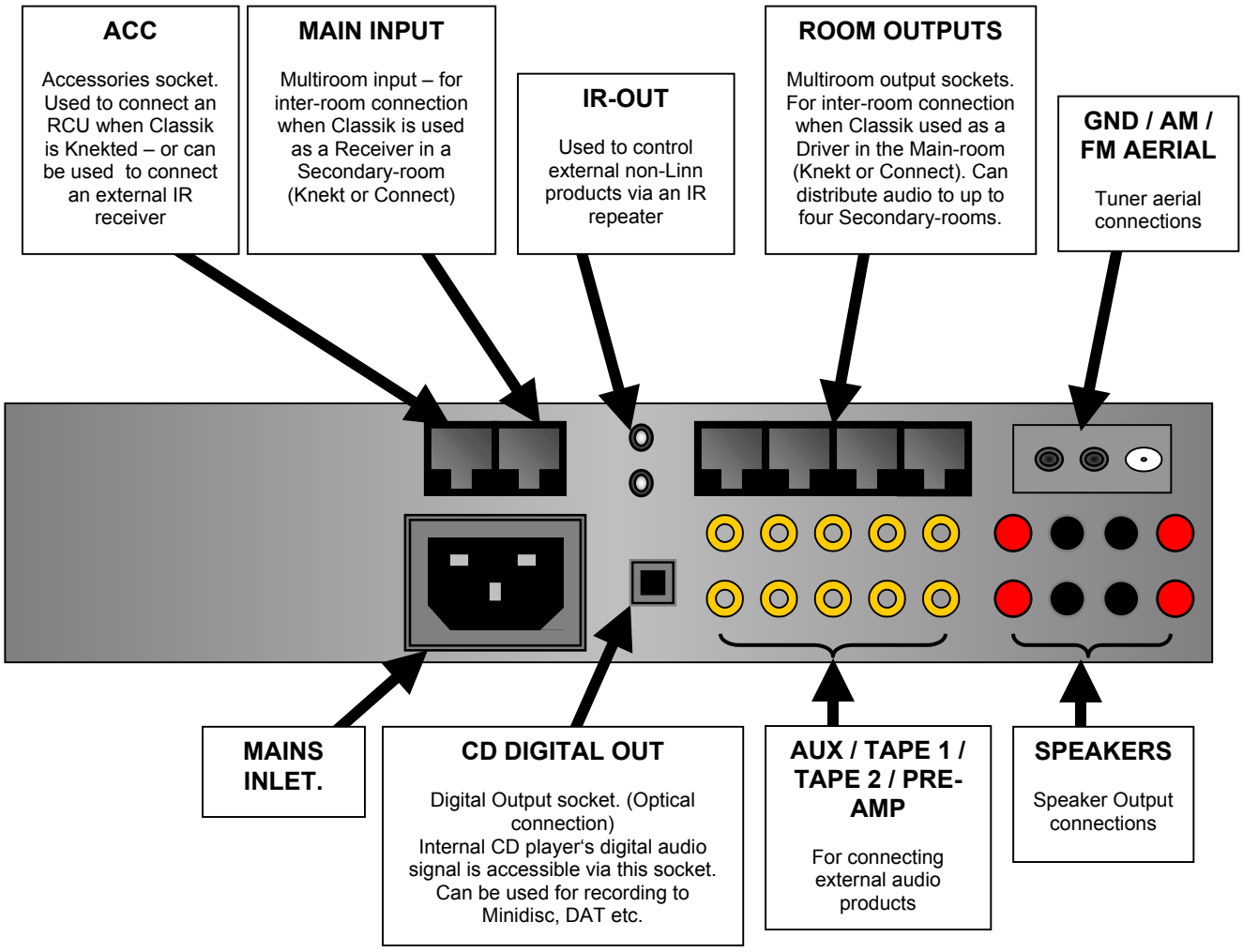
Classik-K in multiroom systems is covered in more detail later in this document.

Important Information

- The 'Mains-out' socket, which was included on the Classik-T has been removed as a response to customer feedback.
- It is not possible to upgrade a Classik-T or a Classik (version 1) to a Classik-K due to board layout changes, hardware changes, electronic specifications and physical layout alterations affecting just about every aspect of the product – all of which were absolutely necessary to add the new functionality to the Classik.
- It is not possible to use a Classik-T or a version-1 Classik in a Connect or Knekt system in any capacity.
- The speaker cable and plug kit that was included with previous versions of Classik is not included with the Classik-K. It was mainly as a response to customer feedback that the cable was not included - the supplied cable in previous versions was not of sufficient length for many applications and so was often wasted. Customers requested a choice of lengths, which we have now introduced as optional - 2metres, 5M and 10M. The speaker plugs are included with the cable kit. Inclusion of speaker cable in the new version of Classik would have entailed a price increase for the product and customer feedback has indicated a preference to have the cables supplied as options instead.
- The Classik-K cannot be RS232 controlled – it contains neither the hardware nor the software to support this function. It is not possible to add an RS232 module.
- If a Classik-K is used as a Driver in a Knekt or Connect system, all rooms including the Main-room must listen to the same Main-room source.
- A Classik-K used as a Receiver in a Knekt system requires the addition of an RCU in all cases. If a Classik-K is used as a Driver in a Knekt system, the use of an RCU (in the Main-room) is optional.

Classik-K Back Panel

This diagram briefly describes the function of each connector. More detail on each aspect of the Classik-K's function can be found in the relevant sections later in this document.



Functional Description

Power Supply

The Classik-K power supply is based on a powerful, yet quiet transformer. You may notice that the transformer and mains inlet are located in a slightly different position compared with earlier versions of Classik – the reason for this is very simply to allow for optimum use of space inside the product as the additional functionality requires more space.

There are two separate power supplies within the Classik – the auxiliary supply and the main supply:

Auxiliary Supply – this is on at all times, as long as the Classik is switched on, even if the unit is in standby. It supplies +5V to the display & control circuits at all times, which allows constant monitoring for incoming user commands via remote or front panel to bring the Classik out of standby. When the Classik is out of standby (normal operating mode) the auxiliary supply also provides ±5V to the CD engine board and switches the main power relay to activate the Main Power Supply.

Main Power Supply – this is only active when the Classik is in normal operating mode. It provides ±35V to the power amplifier section and supplies ±15V and +10V to the audio preamplifier and other analogue low-voltage circuits.

Fuse – the fuse is now located internally, beside the mains-inlet. If it blows, try replacing it (with correct value & rating). In our experience, however, fuses in Linn products seldom blow except where a problem exists either inside or external to the product, which may require to be traced and eradicated before fuse replacement has any permanent effect.

Control & Display

The control board provides the user interface to the Classik via the remote sensor & front panel control keys.

Logic level data lines include power fail detection, interface, I^2C interrupt from the Tuner RC5 control and display data from the CD engine and other Classik-K's (via the internal multiroom facility).

CD-Player

The CD control has its own processor, which receives commands from the control board's keypad and remote control sensor via the RC5 connection. The display data is written directly from this processor to the display driver IC's on the front panel.

The CD board carries out tracking, focus & spindle servo control, diode detection, D-A Conversion and CD loading operations.

CD-Digital Output (new feature)

The CD-Digital Output is a simple digital feed, which comes directly from the CD board, i.e. by-passing the internal D-A converter stage. This can be connected to the 'record' input of a digital recording device such as a CD-R, Minidisc, DAT etc to allow digital recording. The connection is Optical, in order to allow connection to the vast majority of digital recording devices. Any recording devices that do not have an optical connector cannot be used for digital recording from the Classik-K.

Please note, the Classik-K does not contain an A-D converter, so cannot provide a digital output for any other sources (such as Tuner or any external sources)

Tuner

The tuner uses a module that is pre-aligned at the factory – do not change the setting of any of the adjustable devices on the Tuner module. The Tuner module deals with both AM & FM signals. A tuning voltage is applied to the input of the module and this relates to the incoming RF frequency - as the tuning voltage increases, so does the tuned frequency. Control lines for Signal strength output level & AM-mute, as well as FM stereo logic signals are present on the Tuner module.
The I^2C controlled PLL synthesiser monitors the local oscillator frequency for the AM & FM signals and then adjusts the tuning voltage up or down, depending on the frequency desired by the user and the currently tuned RF signal.
The on-board PIC (programmed IC) connects the control lines of the tuning module to the front panel using the I^2C interface and carries out analogue to digital conversions for the signal strength and AM/FM tuning voltage. The on-board analogue switches enable the fast and slow tuning filters, muting and de-emphasis.

Audio Amplifier

Preamplifier

The Classik-K includes very subtle adjustments (lift and cut) for bass & treble on the preamplifier. This allows improvement of the response of the system when using small speakers or for installations in small rooms. When the volume setting is at maximum, i.e. 100, the overall gain of the amplifier is +10dB. Unity gain occurs at around volume setting 73.
The preamplifier output socket (Pre-out) volume is controlled by the Classik's volume setting. This allows the user to connect an additional power amplifier, via the Pre-out sockets to enable bi-amping etc and both power amplifiers (internal & external) will be controlled simultaneously by the Classik's preamplifier. The Pre-out sockets are muted whenever the Classik's power amplifier is muted. The headphone output is similarly controlled when a pair of headphones is connected but the power amplifier and preamplifier are automatically muted when headphones are inserted.

Recording

There are four recordable line-level inputs on the preamplifier – CD, Tuner, Aux and TP1. The tape facility allows the user to either listen to the source being recorded directly or listen to the playback of the tape-deck to monitor record and bias settings. It is not possible to listen to one source while recording another.
The tape output has 0dB (unity) gain relative to the input.

Power Amplifier

The power amplifier section is capable of producing 75 watts RMS into a 4ohm load at nominal mains level. The gain of the Classik's power amplifier is +28.3dB.
The two monolithic IC's which provide the amplification have internal over-current protection to prevent damage from short-circuits on the output (speaker cables shorted together etc) and have internal over-temperature protection which shuts down the power amplifier devices if the temperature rises (this is in addition to the Classik's own over-temperature protection circuitry).

Protection and logic

To protect the speakers from possible transients during switch-on/off, there is hardware and software control of the mute and standby lines to the power amplifier.

The hardware control always goes low to enable a standby, with the exception of the power-fail line going to the control board, which goes high.
The power-fail, temperature trip, software mute and headphone mute all common together to provide control over the standby and mute lines to the power amplifier. This means that should any of the hardware fault conditions occur, the power amplifier goes silently into standby without any software dependence.

Multiroom (new feature)

Two new Multiroom features have been added to the Classik-K – Connect and Knekt – these are fully explained later. A Linn Multiroom system's main functions are to provide very high quality ***audio distribution***, ***display information*** and ***control*** of products from remote locations. The Classik-K can distribute and control internal sources (CD & Tuner) as well as external sources. Display information is available for internal sources only. Music is distributed from a Main-room to up to four secondary rooms for Connect or up to 128 rooms for Knekt.

Interconnection between rooms is made using CAT5 cable, terminated with RJ45 plugs. Compared to most hifi cable, CAT5 is inexpensive and, in conjunction with Linn Driver & Receiver circuits, provides by far the best method of sending audio over long distances. Pre-terminated CAT5 cables can be bought from Linn in 25M, 40M or 60M lengths. Trained Knekt installers will be able to make up CAT5 cables to their own requirements in the normal way (cable configuration as Knekt).

What are the main advantages of the Classik-K Multiroom functionality?

- As a lifestyle improvement, audio-distribution is hard to beat. It is superior in so many ways, compared to having separate systems throughout the house (or one system played loud !) – you can move from room to room, while listening to music – and have control in each room – you can skip, mute, adjust volume, change radio stations etc in any of the rooms.
- Party-mode – the same music can be distributed throughout the house and controlled by the main-room Classik. Ideal for parties, but also useful for more relaxing situations where you wish to listen to music all through the house.
- All Secondary-rooms have the option to listen to & control their own room Classik **or** the main-room Classik at the touch of a button – literally!
- Any 2-channel analogue audio source can be distributed from the main room to other rooms – this could include DVD player, CD Multiplayer, Music server (e.g. Kivor) etc – in other words source products that most customers would only tend to have in their Lounge.
- Allows other family members to access Main-room source products from their own rooms.
- Non-Linn products in the main-room can be controlled from other rooms by firing that product's remote control handset at the Classik-K in that room – commands will be relayed to the product via the interconnect cables and an IR repeater.
- You can keep your CD collection in your living room instead of moving discs from room to room.
- A single Classik-K can work as a Driver **or** a Receiver with no configuration required.
- Very easy to set up and very easy to use.
- Linn multiroom at a more affordable price.

- If full Knekt is being considered, the Classik-K is fully compatible and even the same interconnect cables between rooms can be used; so upgrading from Connect to Knekt is painless.

The Multiroom function is provided as an extra option in the already feature-packed Classik – the way we see it, the main types of Classik-K customer, as regards this function are as follows:

- Those who will be attracted by the Multiroom feature and will purchase with a view to taking full advantage of it (although perhaps not immediately).
- Those who will only ever use the product as a 'standalone' system and always ignore the Multiroom function.
- Those who buy just one Classik-K, intending to use it as a standalone system only and then either discover or realise just what the Multiroom function could do for their lifestyle. They will see how cheaply and easily they can have a fully functional audio distribution system and will soon be looking to buy at least one other Classik and some interconnecting cable.
- Those who have Classik-K's in more than one room as standalone systems and decide to add multiroom functionality by interconnecting them.
- The Knekt customer who wishes to incorporate a Classik-K in their Knekt system.
- Knekt systems designed around the Classik-K

Audio-distribution

Audio distribution can be separated into 'Driver' and 'Receiver' functions.
The ***Driver*** circuit sends the audio from the main-room to the Secondary-rooms. Its main function is to convert the line-level audio signal to 'balanced audio' and send it along the cable to the receiver. This means that it turns simple audio (signal & ground) into "audio +" and "audio –". This balanced audio signal can be sent over long distances of (relatively inexpensive) cable with no discernable noise or loss of quality, as any interference that is picked up along the way is cancelled out when audio + and audio – are rejoined (noise+ cancels out noise-).
The ***Receiver*** circuit in the other Classik-K then reconverts the balanced audio to Line-level, which its amplifier circuit can process as normal.

NOTE – Audio distribution is from Main-room to Secondary-rooms only. Distribution from Secondary-room to Secondary-room is not possible; nor is it possible to distribute from Secondary-room to Main-room. This is the case for Knekt and Connect

Multiroom Display

A Classik-K in a Secondary-room, which is accessing the Main-room Classik-K, also receives the display information from the Main-room unit, so that any useful aspect of its display can be seen on the Secondary-room display (such as CD track & time information, tuner frequencies, source selection etc).
In this respect, the user will find control of the Main-room Classik from a Secondary-room just as easy as controlling the Classik in that room. In fact, the only indication that they are controlling the Main-room Classik and not the one that is facing them is an LED on the display, which will light up showing the word 'MAIN'.

Multiroom Control

In a Secondary-room, the simple act of pressing the 'Listen' button on the handset or Source + & - buttons on the front panel together allows you to alternate between the Main-room or the room that you are in.

Control of the Main-room system from a Secondary-room is done very simply - as long as the Main-room is selected on the Secondary-room Classik-K, **all** IR signals are passed along the interconnect cable between the rooms, regardless of what they are or whether they originated at the front panel or via a (Linn or non-Linn) remote handset. At the other end, *Classik* commands (CD / Tuner / amplifier commands) will be recognised by the other Classik-K and obeyed, but any commands that it doesn't recognise (e.g. non-Linn commands) are simply passed on to the IR-Out sockets (see 'Control of non-Linn products').
While Secondary-rooms can control the Main-room Classik, they cannot control the its volume, balance etc as obviously this would be inconvenient for anyone listening in the Main-room.
Classik remote commands are in RC5 format.
RS232 control of Classik-K is not possible

NOTE - Control of a Secondary-room Classik-K from the Main-room or from another Secondary-room is not possible under any circumstances. This is true for Knekt and Connect.

Multiroom Control of non-Linn products

Non-Linn products can usually be controlled in a Classik-K multiroom system, as long as they are IR remote-controllable:

1. Connect an IR repeater to one of the IR-Out sockets at the back of the Classik-K **Important Note** – Different (non-Linn) products use different IR frequency ranges. It is necessary to use the correct IR-Out socket and perhaps adjust the frequency range of the socket (see User Functions 12 & 13 in Owners Manual). If you know the frequency range of the product's remote, it can be very easily configured, whereas in other cases it may require some trial & error until you find which socket & frequency range applies.
   It is important to read the instructions included with the IR Repeater.
2. Attach the other end of the IR repeater (it has a self-adhesive pad) to the front panel of the non-Linn product, over the remote-receiver of the product (if it is not marked, some trial-and-error may be necessary).
3. Take the product's remote handset to one of the Secondary-rooms and select the Main-room on that room's Classik-K.
4. Select the input to which you have connected the product (e.g. Aux).
5. Point the product's remote handset at the Classik-K and you can control the product as normal.

IR-Repeater part details: XANTECH 282 (available from most electronic parts suppliers – e.g. Tandy, Maplin, RS, Radio Shack etc). Note – this is not a Linn part and is not available from Linn.

NOTE - If the customer finds that moving a handset from room to room is inconvenient, they could buy a programmable remote control for each room (this has the added advantage that they would only require one remote for each room as it could control the Classik etc as well).

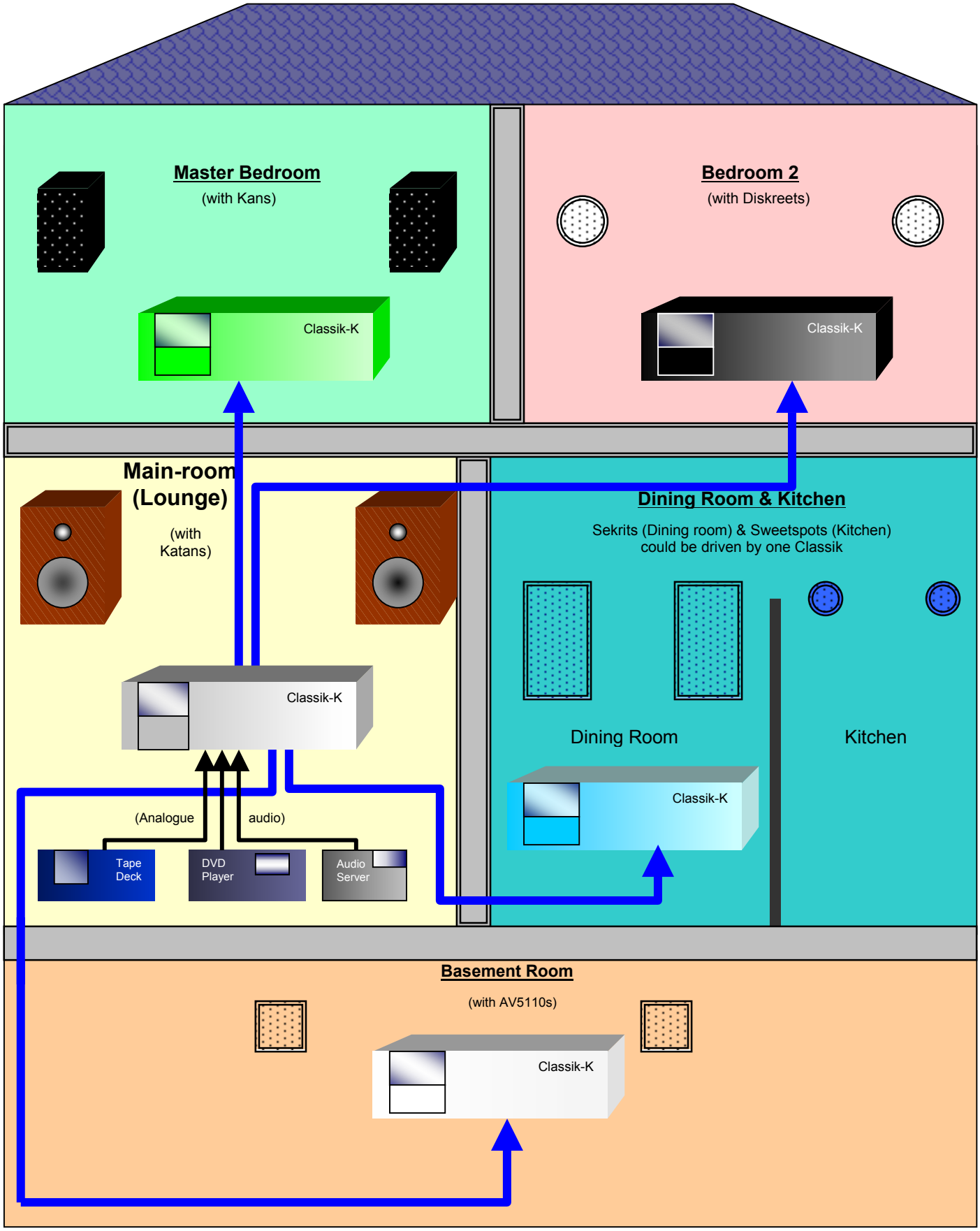
‘Knekt’ v ‘Connect’

‘Connect’ is an excellent method of distributing audio throughout the house and provides the essential advantages of multiroom at an affordable price.
Knekt does, however have several advantages over Connect – it is a more flexible, bespoke multiroom solution, designed & customised for the user’s individual requirements.

- A Knekt Main-room can listen to one Main-room source while the Secondary-rooms listen to a different Main-room source and, with an Intersekt system it is even better, as any room can listen to any main-room source at any time (16 rooms could listen to 16 different sources simultaneously; or – any number of rooms can listen to the same source). With ‘Connect’, on the other hand, only one Main-room source is accessible at any time, from any room including the Main-room.
- With Knekt, many ‘non-Linn’ sources can be controlled from remote locations using the RCU, which can be programmed with the relevant commands, whereas in a ‘Connect’ system, the product’s handset must be taken to the location to allow control.
- Connect system is limited to Main-room and up to 4 Secondary-rooms (= 5 rooms, maximum). A standard Knekt system can distribute to 8 rooms (= 9 rooms including Main-room) and a Knekt Intersekt system can distribute 16 sources to up to 128 rooms.
- External Linn sources cannot be (easily) incorporated into a Connect system. If, for example the customer wanted to upgrade from the Classik’s CD player to a Genki, this is not advisable as it would cause several problems in a Connect system and could never be able to be made to work well at all. Other than upgrading as described, this is not normally an issue however as the only remote controllable products that Linn makes are CD Player, Tuner, Pre-amplifier and multiroom – all of which are included in the Classik-K so this will surface very rarely.
- A Connect system does not and cannot use an RCU, which is one of the main attractions of Knekt. (This is not to say that a Classik-K multiroom system cannot incorporate an RCU, but inclusion of an RCU would turn it into a Knekt system and this would require the services of a Knekt installer.)
- The Knekt system can be very nicely customised for the customer’s particular requirements – e.g. volume can be limited for particular rooms, some functions of certain products can be denied in a particular rooms, rooms, products can be named according to customer’s wishes (max 6 characters) e.g. family members names etc
- Knekt has the ability to be much more discreet than Connect – the Classik in each Connect room will usually require to be situated in a visible, prominent place so that the display can be accessed for remote or front panel control and its CD player is accessible. In a Knekt system, the only aspect of the system that definitely requires to be visible is the RCU and most other parts of the system can be hidden away.
- Connect is perhaps not suited to Bathrooms or other areas where there is a chance of dampness or splashes. As would be the case with any mains-powered product, it is recommended that the Classik is not situated in a sometimes wet and humid place like a bathroom as there is a risk of electric shock. Knekt, on the other hand can be used in a bathroom as mains-powered products can be hidden away and only the RCU (which is low voltage powered) requires to be visible.

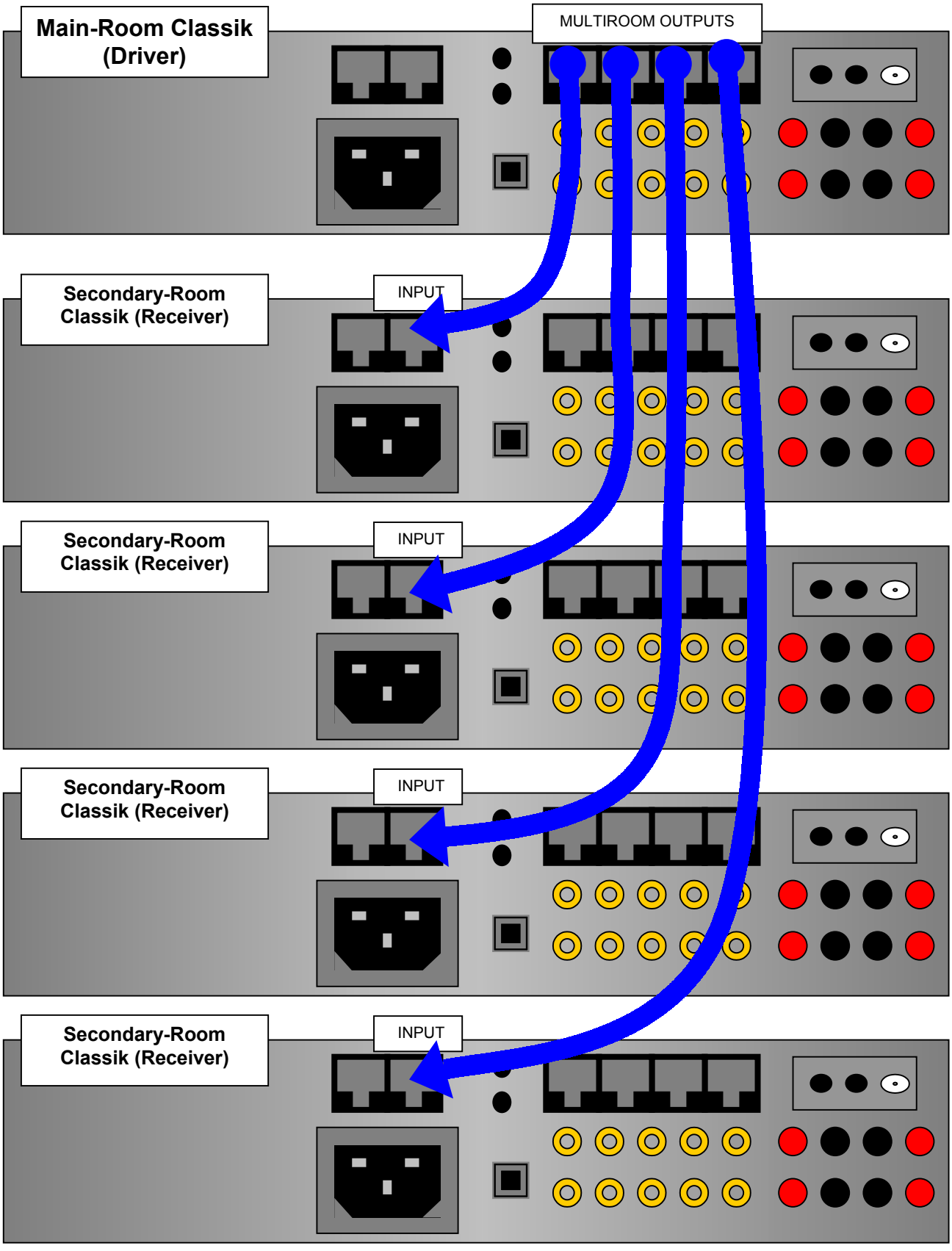
Classik-K Multiroom System Configurations

Example of a Classik 'Connect' System

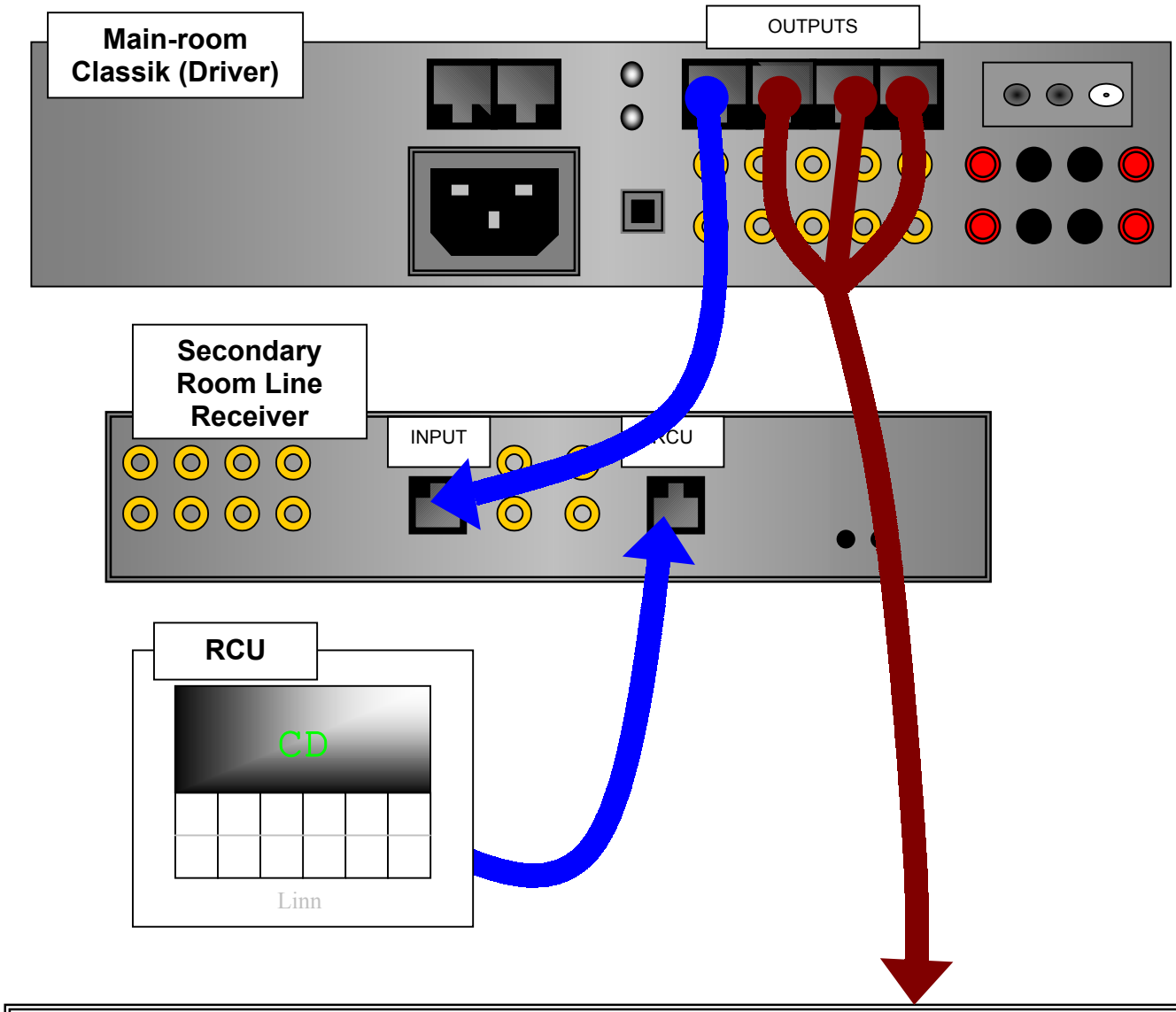


'Connect' System Wiring (Classik only system)

Using Linn CAT5 cables, interconnect the Main-room Classik-K (Driver) to up to four other Classik-K's in Secondary-rooms. Just connect as shown and it is ready to go. See Owners Manual for cable part nos and instructions on how to control.



Classik in Knekt system with Classik as Main-room driver

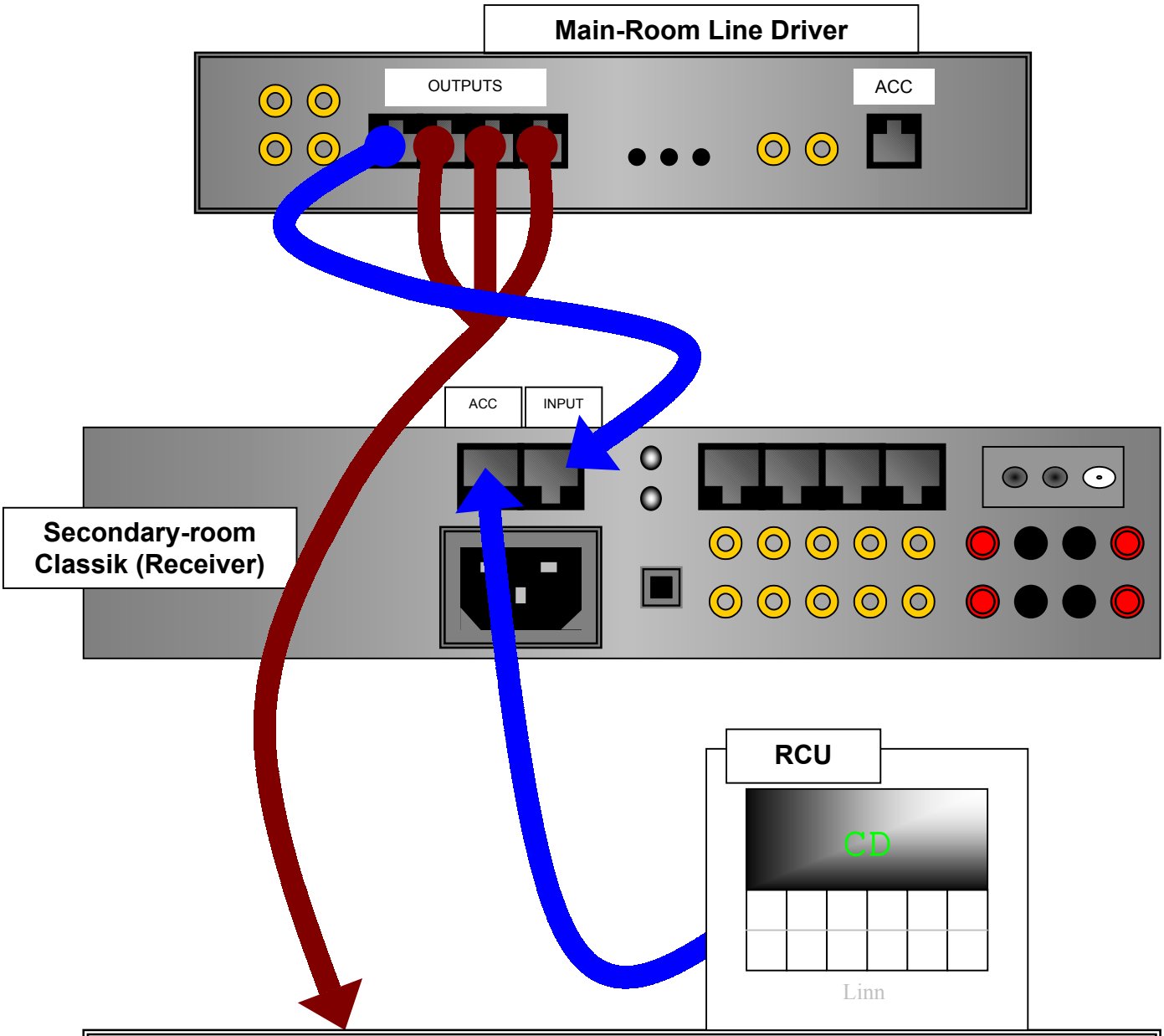


The connection for room 1 could be repeated to include up to four Secondary-rooms. Secondary-rooms could utilise a variety of receiver types, i.e. Line Receiver, Sneaky Receiver/Majik, Roomamp, Direktor etc or even a Classik (Connect or Knekt)

Function notes:

- An RCU would be required in non-Classik Secondary-room(s) to control the Main-room Classik. There can be no exceptions to this rule. Main-room RCU is optional.
- As with a Classik-to-Classik system, all rooms, including Main-room would have to listen to the same Main-room source due to hardware restrictions.
- A combination of Classik and Knekt Secondary-rooms is possible – the Secondary-room Classiks would not require to be programmed but could be used Connected as in the Classik-to-Classik system above.
- Knekt rooms would require to be programmed by a Knekt installer, as would be the case in any Knekt system.
- The Main-room Classik would require to be programmed as a Knekt product whether an RCU is used in the Main-room or not (this is because the Classik requires configuration in order to understand RCU commands).
- Unlike standard Line-Drivers, the Classik-K Driver cannot be doubled up to add more rooms – 4 rooms plus Main-room is the absolute maximum with a Classik as Driver.
- RS232 control of Classik-K is not possible

Classik in Knekt system with Classik as Secondary-room receiver (Line Driver system)

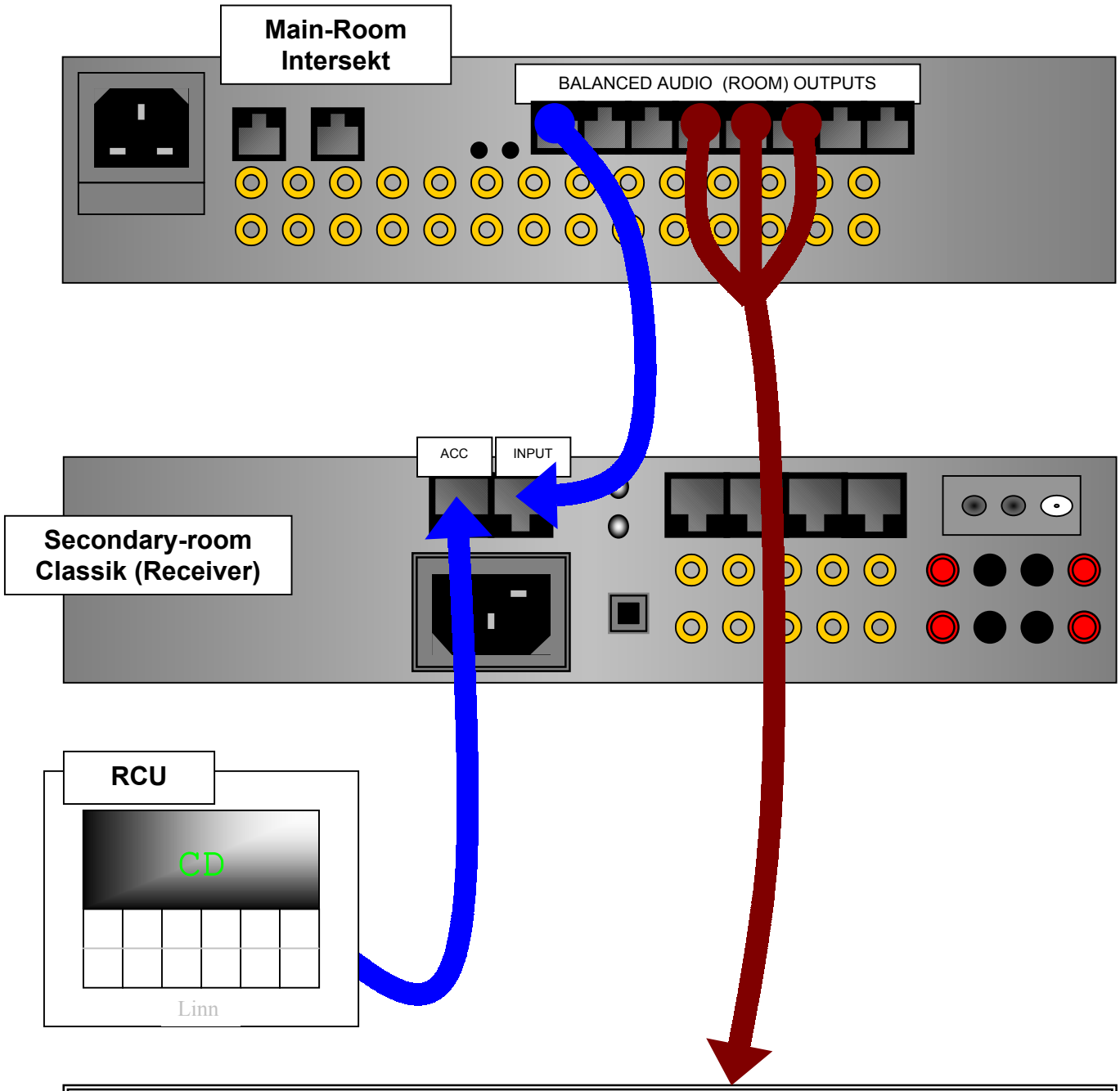


The connection for room 1 could be repeated to include up to four secondary rooms, which could utilise a Classik or a variety of receiver types, i.e. Line Receiver, Sneaky Receiver/Majik, Roomamp, Direktor etc.

Function Notes

- With this configuration, an RCU is required in the Secondary-room in all cases.
- The Classik and its RCU must be programmed as Knekt products, by a trained Knekt installer. The Classik would then effectively become a conventional Knekt Receiver.
- With this configuration, the Main-room can listen to one source, while the other rooms listen to a different Main-room source (or the same source if required – i.e the Secondary-rooms' selection is independent of the Main-room selection).
- All Secondary-rooms listening to the Main-room must listen to the same Main-room source (this is standard in any Line Driver system).
- Another Line Driver can be added in the Main-room, which can bring the total number of rooms up to a maximum of 8, if RCU is used in the Main-room or 9, if no RCU in Main-room.
- RS232 control of Classik-K is not possible

Classik in Knekt system, with Classik as Secondary-room receiver (Intersekt system)



The connection for room 1 could be repeated to include up to 128 secondary rooms, each of which could utilise a Classik or a variety of receiver types, (Line Receiver, Sneaky Receiver/Majik, Roomamp, Direktor etc.)

Function notes

- With this configuration, an RCU is required in the Secondary-room in all cases.
- The Classik and its RCU must be programmed as Knekt products by a trained Knekt installer and the Classik would then effectively become a conventional Knekt Receiver.
- As with all Intersekt systems, but unlike the non-Intersekt systems detailed above, any Secondary-room can listen to any Main-room source – e.g. 8 different rooms could listen to 8 different Main-room sources simultaneously.
- RS232 control of Classik-K is not possible

Glossary

A-D Converter (ADC)
Analogue to digital converter

CAT5
A type of 8-way cable, which is used in a Knekt system to inter-connect between rooms, or devices within rooms - used also in telecommunications applications.

Classik-K
Version of Classik that contains Multiroom facilities – Knekt and Connect. The 'K' in the name refers to 'Knekt' and is used to differentiate this version from previous versions of Classik.

Classik-T
Second version of Classik – with tuner included (the 'T' in the name refers to tuner and differentiates this version from the first model which was a CD-amplifier only and was known simply as the Classik.

Connect
(In the context of Classik Multiroom) A Classik only audio distribution system.

D-A Converter (DAC)
Digital to analogue converter

Driver
In a Linn Multiroom system, the Driver distributes audio, control and display information from the Main-room to Secondary-rooms.

IF
Intermediate Frequency.

IR
Infra-red. IR is a type of light that is invisible to the naked eye – remote control handsets use IR to send commands to the product.

I^2C
A Philips communication protocol.

Knekt
Knekt is a Linn Brand, covering a family of products – a flexible, customised audio distribution system.

Main-room
In a Knekt or Connect system, the Main-room is the room that contains the Driver or Intersekt and contains the source products that you wish to distribute to Secondary rooms. The Main room need not be an actual room, it may be a

cupboard, attic or any area where the driver and source products are stored but this area is nonetheless defined as the Main-room.

Multiroom
Another term for an audio distribution system.

PLL
Phase-locked loop. A circuit that allows tuners to lock onto stations.

RC5
A Philips remote control format.

Receiver
A Linn multiroom requires a Receiver in every Secondary-room. Receives the Balanced Audio signal from the main room and converts it into standard Line Level audio. Also relays control and feedback information between its own room and the main room system.

RF
Radio Frequencies

Secondary-room
A room or area included in a Linn multiroom system that is not the Main-room i.e. one Main-room distributes audio to a number of Secondary rooms. Also sometimes referred to as a Local room or a Satellite room.

Standalone
Loosely refers to a product or system that is not interconnected to other products or systems. In the context of Linn multiroom systems, you would use the term to describe a product or system that is not part of a multiroom system, in order to differentiate it from those that are i.e you may say that one Classik is ‘Connected’, while another is Standalone.