

ARCAM

Dear Arcam Owner,

Thank you for purchasing this Arcam product and being one of the first in the world to own the very latest generation in a long history of class-leading AV equipment. We are confident that you will enjoy many years of listening and viewing pleasure from its use.

I would like to draw your attention to the fact that the box was opened by one of our skilled technicians for the purpose of performing an upgrade for optimum performance. Of course the unit was re-packed with the utmost care, although if you have any further questions, please contact your dealer or csupport@harman.com.

Please also register your ownership of this product with us at www.arcam.co.uk – follow the link to product registration. This website is also an excellent place to learn more about complimentary Arcam products as well as future news and upgrades to your new Arcam product.

With best regards,

A handwritten signature in brown ink, appearing to read 'N. Clarke', with a stylized, flowing script.

Nicholas Clarke
Senior Director, Global Engineering, Luxury Audio

HANDBOOK

ARCAM | HDA

AVR SURROUND AMPLIFIERS

AV40/AVR30/AVR20/AVR10

Safety Guidelines

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug.

A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.

When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.



13. Unplug this apparatus during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel.

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

15. Object or liquid entry

WARNING – Take care that objects do not fall and liquids are not spilled into the enclosure through any openings. The equipment shall not be exposed to dripping or splashing. Liquid-filled objects such as vases should not be placed on the equipment.

16. Climate

The equipment has been designed for use in moderate climates and in domestic situations.

17. Cleaning

Unplug the unit from the mains supply before cleaning.

The case should normally only require a wipe with a soft, lint-free cloth. Do not use chemical solvents for cleaning.

We do not advise the use of furniture cleaning sprays or polishes as they can cause permanent white marks.

18. Power sources

Only connect the equipment to a power supply of the type described in the operating instructions or as marked on the equipment.

The primary method of isolating the equipment from the mains supply is to remove the mains plug. The equipment must be installed in a manner that makes disconnection possible.

19. Abnormal smell

If an abnormal smell or smoke is detected from the equipment, turn the power off immediately and unplug the equipment from the wall outlet. Contact your dealer and do not reconnect the equipment.

20. Damage requiring service

The equipment should be serviced by qualified service personnel when:

- A. The power-supply cord or the plug has been damaged, or
- B. Objects have fallen, or liquid has spilled into the equipment, or
- C. The equipment has been exposed to rain, or
- D. The equipment does not appear to operate normally or exhibits a marked change in performance, or
- E. The equipment has been dropped or the enclosure damaged.



CAUTION

RISK OF ELECTRIC SHOCK DO NOT OPEN

ATTENTION

RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR



CAUTION: To reduce the risk of electric shock, do not remove cover (or back). No user serviceable parts inside. Refer servicing to qualified service personnel.

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



The lightning flash with an arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated 'dangerous voltage' within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



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

CAUTION: In Canada and the USA, to prevent electric shock, match the wide blade of the plug to the wide slot in the socket and insert the plug fully into the socket.

Class II product

This equipment is a Class II or double insulated electrical appliance. It has been designed in such a way that it does not require a safety connection to electrical earth ("ground" in the U.S.)

Warning

Mains plug/appliance coupler is used to disconnect device and it shall remain readily operable.

Safety Compliance

This equipment has been designed to meet the IEC/EN 60065 international electrical safety standard.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

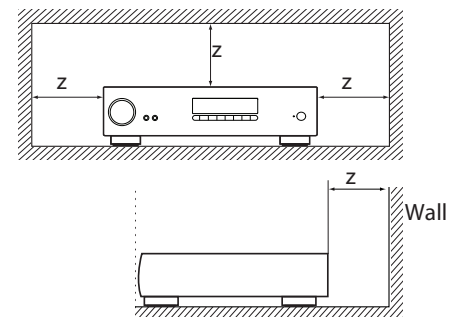
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

The building installation shall be regarded as providing protection in accordance with the rating of the wall socket outlet.

Caution on installation

For proper heat dispersal, do not install this unit in a confined space, such as a bookcase or similar enclosure.

- ☐ More than 0.3m (12in) is recommended.
- ☐ Do not place any other equipment on this unit.



FCC Information (for US customers)**PRODUCT****CONTAINS TRANSMITTER MODULE FCC ID:****APILUXASTR01, APILUXABT01**

This product complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this product may not cause harmful interference, and (2) this product must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTICE: DO NOT MODIFY THIS PRODUCT

This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modification not expressly approved by ARCAM may void your authority, granted by the FCC, to use the product.

CAUTION (For Bluetooth/Wi-Fi)

- To comply with FCC RF exposure compliance requirement, separation distance of at least 20 cm must be maintained between this product and all persons.

- This product and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter.

NOTE

This product has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This product generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this product does cause harmful interference to radio or television reception which can be determined by turning the product OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:

- ☐ Reorient or relocate the receiving antenna.
- ☐ Increase the separation between the equipment and the receiver.
- ☐ Connect the product into an outlet on a circuit different from that to which the receiver is connected
- ☐ Consult the local retailer authorised to distribute this type of product or an experienced radio / TV technician for help.

IC Information (For Canadian customers)**PRODUCT****CONTAINS TRANSMITTER MODULE IC:****6132A-LUXASTR01, 6132A-LUXABT01**

This product complies with RSS-247 of Industry Canada. Operation is subject to the following two conditions: (1) this product may not cause harmful interference, and (2) this product must accept any interference received, including interference that may cause undesired operation. This Class B digital apparatus complies with Canadian ICES-003.

CAUTION

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication. (i) the device for operation in the band 5,150 – 5,250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems. (ii) high-power radars are allocated as primary users (i.e. priority users) of the bands 5,250 – 5,350 MHz and 5,650 – 5,850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

Informations sur IC (pour les clients canadiens)**APPAREIL****CONTIENT MODULE ÉMETTEUR IC:****6132A-LUXASTR01, 6132A-LUXABT01**

Cet appareil est conforme à la norme CNR-247 du Canada. L'utilisation de ce dispositif est autorisée seulement aux deux conditions suivantes : (1) il ne doit pas produire de brouillage, et (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

For Canadian customers / Pour les clients**canadiens: CAN ICES-3 (B) / NMB-3 (B) "for indoor use only"****ATTENTION**

Afin de réduire le risque d'interférence aux autres utilisateurs, il faut choisir le type d'antenne et son gain de façon à ce que la puissance isotrope rayonnée équivale (p.i.r.e.) ne soit pas supérieure au niveau requis pour l'obtention d'une communication satisfaisante.

(i) les dispositifs fonctionnant dans la bande 5150–5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux.

(ii) De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250 – 5350 MHz et 5650 – 5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

RF Exposure Information

This equipment complies with FCC / IC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65 and RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment has very low levels of RF energy that are deemed to comply without testing of specific absorption ratio (SAR).

Cet équipement est conforme aux normes d'exposition aux radiations FCC / IC destinées pour un environnement non contrôlé et satisfait les directives d'exposition à la radiofréquence (RF) dans le supplément C des OET65 et RSS-102 des règles d'exposition à la fréquence radio (RF) IC. Cet équipement a de très faibles niveaux d'énergie RF qui sont jugés conformes sans test de taux d'absorption spécifique (SAR).

Safety Information (for European customers)

Avoid high temperatures. Allow for sufficient heat dispersion when installed in a rack.

Handle the power cord carefully. Hold the plug when unplugging the cord.

Keep the unit free from moisture, water, and dust.

Unplug the power cord when not using the unit for long periods of time.

Do not obstruct the ventilation holes.

Do not let foreign objects into the unit.

Do not let insecticides, benzene, and thinner come in contact with the unit.

Never disassemble or modify the unit in any way.

Ventilation should not be impeded

Ventilation openings with items, such as newspapers, tablecloths or curtains.

Naked flame sources such as lighted candles should not be placed on the unit.

Safety Information (for European customers)

Observe and follow local regulations regarding battery disposal.

Do not expose the unit to dripping or splashing fluids.

Do not place objects filled with liquids, such as vases, on the unit.

Do not handle the mains cord with wet hands. When the switch is in the OFF position, the equipment is not completely switched off from MAINS.

The equipment shall be installed near the power supply so that the power supply is easily accessible.

A note about recycling

This product's packaging materials are recyclable and can be reused. Please dispose of any materials in accordance with the local recycling regulations. When discarding the unit, comply with local rules or regulations.

Batteries should never be thrown away or incinerated but disposed of in accordance with the local regulations concerning battery disposal.

This product and the supplied accessories, excluding the batteries, constitute the applicable product according to the WEEE directive

Correct disposal of this product

These markings indicate that this product should not be disposed with other household waste throughout the EU.



Pb

To prevent possible harm to the environment or human health from uncontrolled waste disposal and to material resources, this product must be disposed of responsibly.

To dispose of your product, please use your local return and collection systems or contact the installer where the product was purchased.

Radio specification (for Europe model):

Type	Frequency Range	Max. RF Power
Bluetooth	2,402-2,480MHz	20dBm
WLAN (2.4GHz)	2,400-2,483.5MHz	20dBm
5GHz Radio	5,150-5,250MHz	23dBm
	5,250-5,350MHz	23dBm
	5,470-5,850MHz	30dBm

Note: The above specifications are based on the RE directive. There is a possibility it can vary by country.

Welcome

Thank you and congratulations...

...for purchasing your Arcam HDA Receiver.

Arcam has been producing specialist audio products of remarkable quality for over three decades and the new Receivers are the latest in a long line of award winning Hi-Fi. The design of the HDA range draws upon all of Arcam's experience as one of the UK's most respected audio companies, to produce Arcam's best performing range of products yet – designed and built to give you years of viewing and listening enjoyment.

This handbook is intended to give you a detailed guide to using the Receiver. It starts by giving advice on installation, moves on to describe how to use the product and finishes with additional information on the more advanced features. Use the contents list shown on this page to guide you to the section of interest.

We hope that your HDA receiver will give you years of trouble-free operation. In the unlikely event of any fault, or if you simply require further information about Arcam products, our network of dealers will be happy to help you. Further information can also be found on the Arcam website at www.arcam.co.uk.

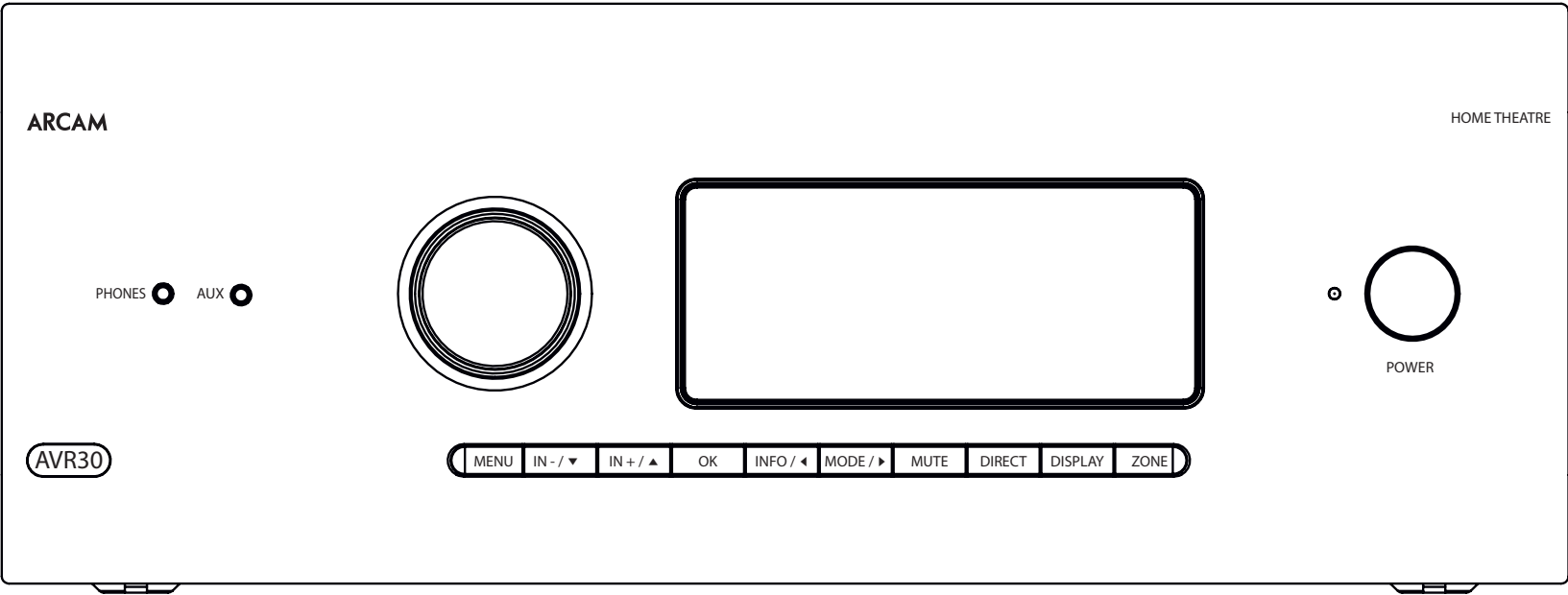
The HDA development team

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	Professional Installation?	
	<p>It may be that the Receiver has been installed and set up as part of your Hi-Fi installation by a qualified Arcam dealer. In this case, you may wish to skip the sections of this handbook dealing with installation and setting up, and move directly to the sections dealing with using the unit. Use the Contents list to guide you to these sections.</p>	
	DIY setup?	
	<p>The Receiver is a powerful and sophisticated piece of AV equipment. If you are setting the unit up yourself, it is recommended that you read this handbook thoroughly before beginning. For instance, correct speaker configuration and placement is a key to getting the most out of your Receiver and making sure that all the elements of your system work in harmony.</p>	

Before You Begin...



Arcam HDA Receiver

The Receivers are high-quality and high-performance home-cinema processors and amplifiers built to Arcam's quality design and manufacturing standards. They combine digital processing with high-performance audio and video components to bring you an unrivalled home-entertainment centre.

The Receiver allows switching and control of seven analogue and six digital audio sources in addition to internal FM and DAB+ radios – as well as networked audio sources – making any of the models an ideal hub for both home-cinema and two-channel stereo systems.

Since many of these source components are also capable of generating video signals, the Receiver includes broadcast-quality switching for HDMI (7 x HDMI2.0b, HDCP2.2) video/ audio signals. Control of the Receiver is either by front panel control buttons, IR remote control, IP (Ethernet) control or RS232 port.

The remote control supplied with the Receiver is a multi-device 'universal' learning remote control which is simple to use, and once set up is able to control a complete system. It can be programmed using its vast internal code library to control CD and BD players, PVRs, TVs and other devices.

The installation of the Receiver in a listening room is an important process which requires care at every stage. For this reason, the installation information is very comprehensive and should be followed carefully to achieve an unrivalled level of performance.

The Receiver is designed to produce a level of performance that will truly bring music and movies to life.

Placing the unit

- Place the unit on a level, firm surface, avoiding direct sunlight and sources of heat or damp.
- Do not place the Receiver on top of a power amplifier or other source of heat.
- Do not place the amplifier in an enclosed space such as a bookcase or closed cabinet unless there is good provision for ventilation (see page EN-2). The Receiver will run warm during normal operation.
- Do not place any other component or item on top of the amplifier as this may obstruct airflow around the heat-sink, causing the amplifier to run hot. (The unit placed on top of the amplifier would become hot, too.)
- Make sure the remote-control receiver on the front panel display is unobstructed, otherwise this will impair the use of the remote-control. If line-of-sight is impractical, a remote-control repeater can be used with the rear panel connector (see page EN-34).
- Do not place your record deck on top of this unit. Record decks are very sensitive to the noise generated by mains power supplies which will be heard as a background 'hum' if the record deck is too close.

Power

The amplifier is supplied with a moulded mains plug already fitted to the lead. Check that the plug supplied fits your supply – should you require a new mains lead, please contact your Arcam dealer.

If your mains supply voltage or mains plug is different, please contact your Arcam dealer immediately.


The Receiver can be switched for operation between 220–240V (switch position 230V) and 110–120V (switch position 115V).

NOTE: Ensure that the Receiver is switched off and the power lead removed before changing the position of the voltage range switch.

Push the IEC plug end of the power cable into the socket on the back of the amplifier, making sure that it is pushed in firmly. Plug the other end of the cable into your mains socket and, if necessary, switch the socket on.

The Receiver can be turned on using the power switch on the front panel. While switched on, the front panel LED will glow white.

Standby power

The Receiver can be switched into standby mode using the  button on the remote control. While in standby mode the front panel LED will glow red and (with default settings) power consumption is less than 0.5 Watts.

While in Standby mode, it may be possible to hear a slight residual hum coming from the mains transformer inside the amplifier. This is perfectly normal. However, if the unit is to be left unused for an extended period, we recommend that you disconnect it from the mains supply to save power.

Interconnect cables

We recommend the use of high-quality screened cables that are designed for the particular application. Other cables will have different impedance characteristics that will degrade the performance of your system (for example, do not use cabling intended for video use to carry audio signals). All cables should be kept as short as is practically possible.

It is good practice when connecting your equipment to make sure that the mains power-supply cabling is kept as far away as possible from your audio cables. Failure to do so may result in unwanted noise in the audio signals.

For information on speaker cabling, please refer to the 'Speakers' section, beginning on page EN-16.

Radio interference

The Receiver is an audio device containing microprocessors and other digital electronics. Each model has been designed to very high standards of electromagnetic compatibility.










This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

If the Receiver causes interference to radio or television reception (which can be determined by switching the Receiver off and on), the following measures should be taken:

- Re-orient the receiving antenna or route the antenna cable of the affected device as far as possible from the ARCAM Receiver and its cabling.
- Relocate the affected device with respect to the ARCAM Receiver.
- Connect the affected device and the Receiver to different mains outlets.


If the problem persists, please contact your Arcam dealer.

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	<p>MQA (Master Quality Authenticated)</p> <p>MQA is an award-winning British technology that delivers the sound of the original master recording. The master MQA file is fully authenticated and is small enough to stream or download.</p> <p>Visit mqa.co.uk for more information.</p> <p>Arcam AVRs include MQA technology, which enables you to play back MQA audio files and streams, delivering the sound of the original master recording.</p> <p>'MQA' or 'MQA Studio' indicates that the product is decoding and playing an MQA stream or file, and denotes provenance to ensure that the sound is identical to that of the source material. 'MQA Studio' indicates it is playing an MQA Studio file, which has either been approved in the studio by the artist/producer or has been verified by the copyright owner.</p> <p>MQA and the Sound Wave Device are registered trade marks of MQA Limited. © 2016</p>
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Rear Panel Connections and Controls

EN

 Please read the 'Placing the unit', 'Power' and 'Interconnect cables' sections on page EN-7 before connecting up your Receiver!

- AVR30
- AVR20
- AVR10

NETWORK CONNECTORS

For information, see page EN-13, EN-14.

HDMI CONNECTORS

For information, see page EN-10.

USB SOCKET

See page EN-14.

PREAMPLIFIER INPUTS

See page EN-11.

FM/DAB

FM aerial socket, or DAB aerial socket.

DIGITAL CONNECTORS

Coaxial and optical digital audio connectors, see page EN-11.

NETWORK/BLUETOOTH CONNECTORS

For information, see page EN-13,

PREAMPLIFIER OUTPUTS

See page EN-11.

SERIAL AND IR CONTROL

Serial control, trigger and IR connectors, see page EN-14.

SPEAKER CONNECTORS

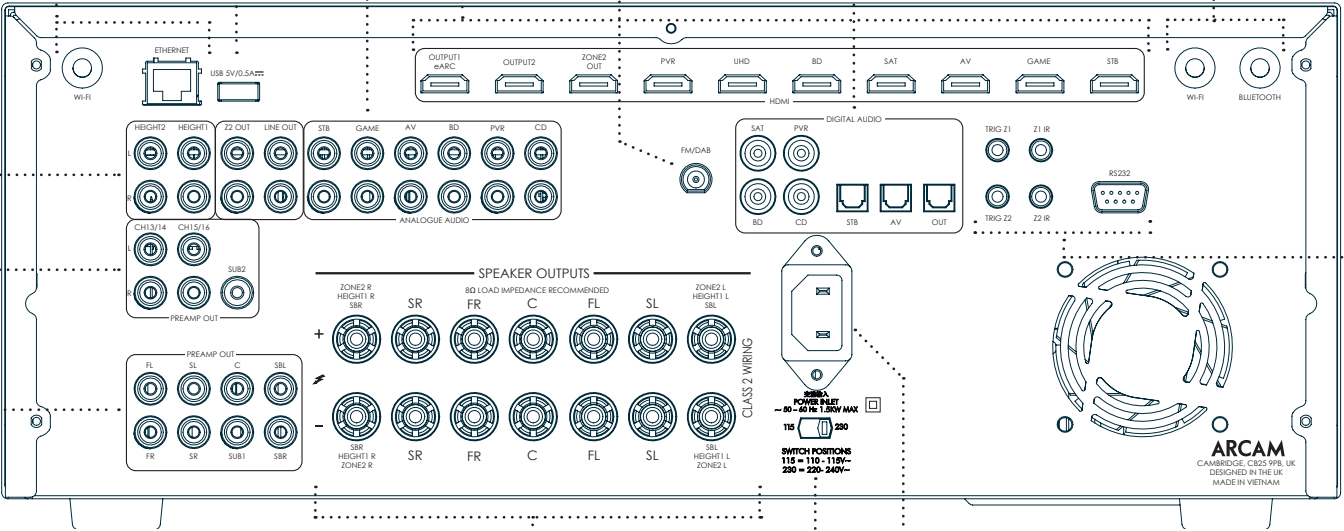
For information, see page EN-16.

POWER INLET

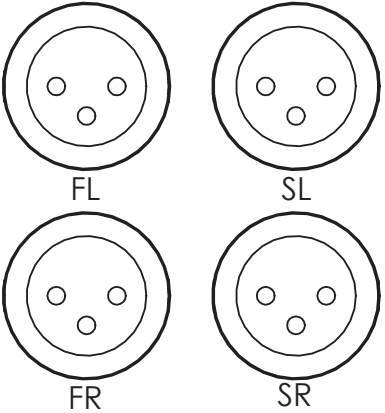
Connect the correct mains cable here

VOLTAGE SELECT

Ensure the voltage selected matches your local power supply.



AV40



Audio/Video Connections

Before connecting your Receiver to your source components and speakers, please read through the next few pages which will explain all the input and output connectivity that is available. The 'Speakers' section explains how to connect up your speakers to avoid damage to the amplifier and how to arrange your speakers for best performance.

General

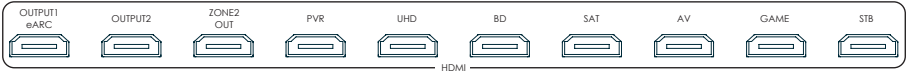
The inputs are named to make it easier to reference connected devices (e.g. **BD** or **UHD**). They all have the same input circuit, so there is no reason why you should not connect a different device to any of the inputs. For example, if you had two BD players and the AV input was not being used, then the second BD player could be connected to the AV input.

When connecting a video source, its audio must be connected to the corresponding sockets. For example, if you had a satellite decoder plugged into a **SAT** video input, the audio must be connected to the **SAT** audio inputs!

Making Connections

- Take care to place cables as far from any power supply cabling as is practicable, to reduce hum and other noise problems.

NOTE: For each input, you must set the 'Video Source' and 'Audio Source' settings according to the connection type. (see "Input Config." on page EN-31)



HDMI Connectors

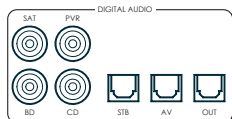
PVR, UHD, BD, SAT, AV, GAME, STB

Connect the HDMI video outputs of your source equipment to these corresponding HDMI inputs.

OUTPUT

Connect this output to the HDMI video input of your display device. Output1 is compatible with HDMI Enhanced Audio Return Channel (eARC). If you have a supported television then sound from the television's internal tuner (e.g. Freeview, Freesat, DVB-T) will be available using the Receiver's 'Display' input.

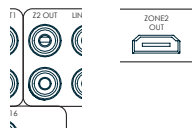
Digital audio connectors



SAT, PVR, BD, CD, STB, AV

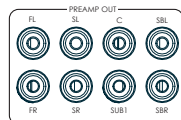
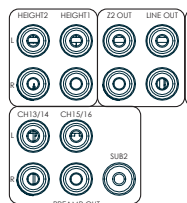
Connect these inputs to the digital outputs of your available source equipment.

Zone 2 connectors



The Z2 out HDMI connector can be used to connect the output of the Receiver to a system located in a second room.

Analogue preamplifier outputs



All preamplifier analogue outputs are buffered, have a low output impedance, are at line level and follow the Zone 1 volume control setting. They are able to drive long cables or several inputs in parallel if required.

For more information on connecting speakers or additional power amplifiers, see pages EN-9 and EN-16.

The AV40 has XLR outputs in addition to the phono pre-outs for connection to an external amplifier.

Analogue audio inputs



STB, GAME, AV, BD, PVR, CD

Connect the left and right inputs to the left and right outputs of your source equipment.

Front panel AUX input



The front panel **AUX** input can be used as an analogue input, using a stereo 3.5mm lead.

Front panel PHONES socket

This socket accepts headphones with an impedance rating between 32Ω and 600Ω, fitted with a 3.5mm stereo jack plug. The headphone socket is always active, except when Receiver is muted.

When the headphone jack is inserted, the speaker outputs and analogue preamplifier outputs are automatically muted.

Connection Guide

Blu-ray Disc (BD)/DVD player

The diagram shows how to make audio and video connections from a typical BD/DVD player.

Whether HDMI, digital or analogue connections are used, connecting using the input/inputs labelled **BD** on the Receiver will aid in operation.

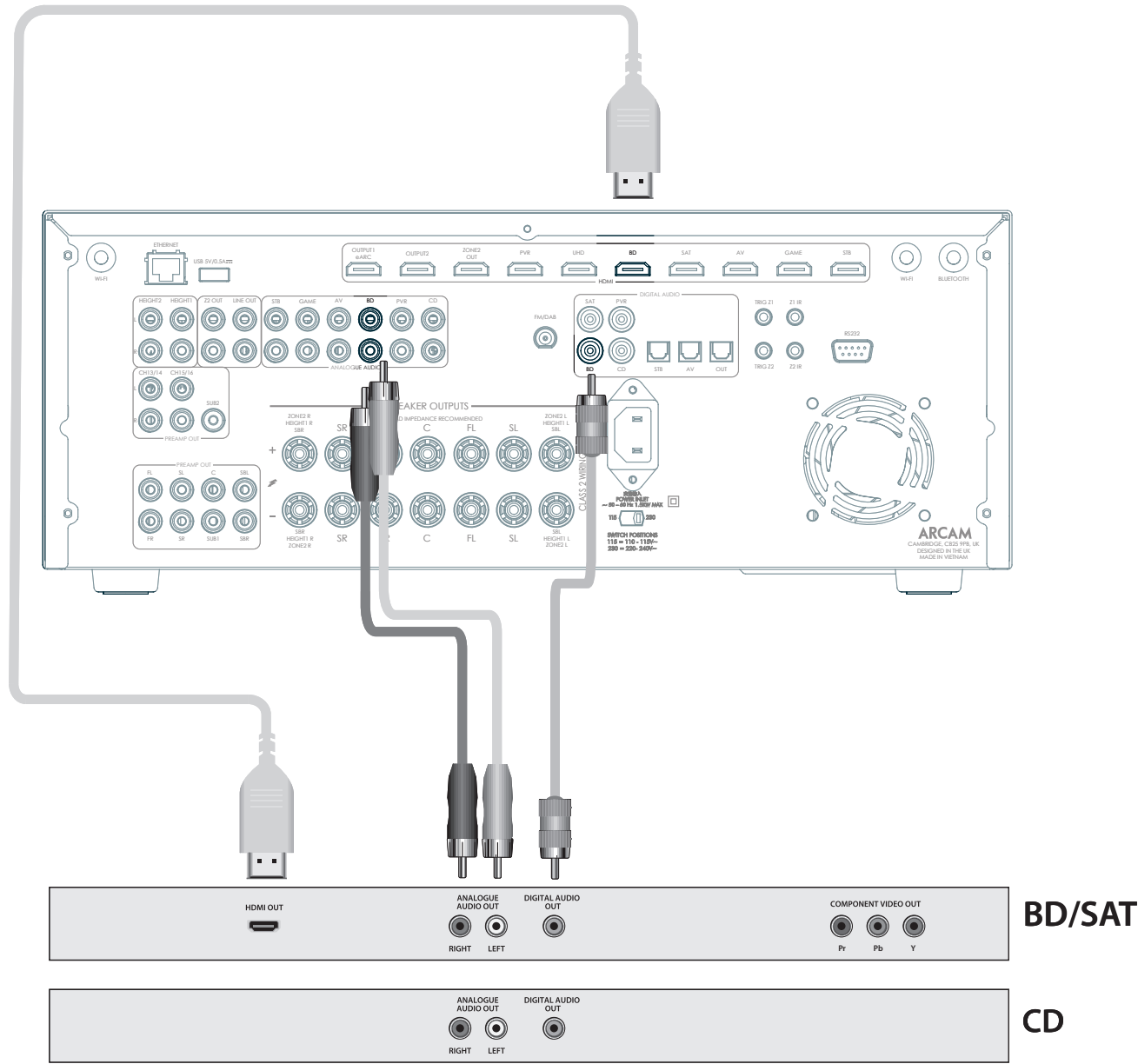
Satellite receiver

A satellite receiver is connected with the same order of preference according to the outputs provided by the satellite receiver.

CD player

Connect the digital output to the digital **CD** input of the Receiver and analogue output to the analogue **CD** input of the Receiver, using a high quality interconnect cable.

NOTE: For each input, you must set the 'Audio Source' setting according to the connection type. (see "Input Config." on page EN-31)



Radio & Wireless Audio Connectors

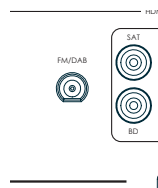
DAB/FM Connector

The Receiver is fitted with an FM and a DAB/DAB+ receiver module. The type of aerial you need depends on your listening preferences and the local conditions.

Your Receiver is capable of superb radio reception, but only if it is receiving a good quality transmission signal.

Try the aerials supplied with your unit. If you are in a medium to strong signal area, these should be adequate for good reception. In areas with poor signal strength, you may require a roof or loft mounted aerial.

Contact your local Arcam dealer or aerial installation experts for advice about local reception conditions.



In strong signal areas, the DAB/FM 'T' wire aerial supplied can be used with reasonable results. Mount the aerial as high up as possible on a wall.

In the UK the 'T'-elements need to be positioned vertically for DAB reception since broadcasts are vertically polarised. In other localities, check with your Arcam dealer or try both horizontal and vertical positions for best reception.

Try each usable wall of the room to see which gives best reception and use tacks or adhesive tape to secure the aerial in a 'T' shape, but note that no tacks should come into contact with the internal wire of the aerial.

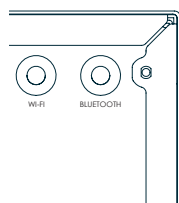
When installed and receiving DAB/FM, check the signal strength by pressing the front panel or remote control's **INFO** button until the signal quality indicator is displayed.

In weak signal areas, a high-gain, externally-mounted or roof-mounted aerial is desirable in order to receive the highest number of services.

In Band III transmission areas (such as the UK), use a multi-element Yagi aerial with the elements mounted vertically, as the transmissions are vertically polarised. If you are close to more than one transmitter, use an omnidirectional or folded dipole aerial.

If the DAB services in your area are transmitted on L-band, then ask your dealer for advice for the best aerial to use.

Wi-Fi/Bluetooth



If using the Wi-Fi or Bluetooth features of the Receiver, please attach the single antenna for the Bluetooth and the two antennas for the Wi-Fi.

Other Connectors

Serial connector

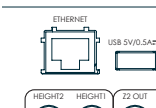
RS232 serial connector



The connector is used with control devices having an RS232 serial port (for example, Crestron and AMX touch-screen controllers).

Network connector

Networking is a large subject and only the briefest guidelines are presented in this handbook. Please contact your Arcam dealer or specialist installer for more information about introducing the Receiver into your computer network.



Ethernet

If an Ethernet cable is connected, the Receiver will automatically attempt to connect to your network.

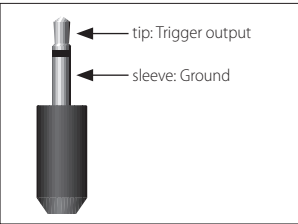
You should use CAT5 cable plugged into the RJ45 socket labelled **ETHERNET** on the rear panel.

If your network uses static IP addressing rather than DHCP, you will need to provide IP address, gateway and DNS; see page EN-34 for information on setting up the network.

USB connector

The Receiver can be updated via the USB socket on the rear of the unit, if no network connection and so "Over The Air" update is not available.

Trigger connectors



The trigger connectors (**TRIG Z1** and **TRIG Z2**) provide an electrical signal whenever the Receiver is switched on and the relevant zone enabled.

The trigger signal can be used to switch on and off compatible pieces of home entertainment equipment, for example, you could set up a trigger to turn on your television and BD player whenever the Receiver was switched on.

There are two trigger output sockets on the Receiver, each capable of outputting a 12V, 70mA switching signal. The socket is designed for mono 3.5mm jacks: tip is the trigger output, sleeve is ground.

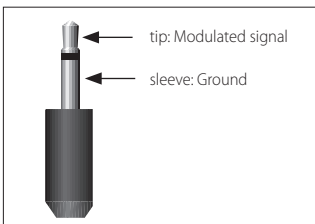
TRIG Z1

Use for remotely turning on and off power amps or source equipment for Zone 1. On = 12V, Off = 0V.

TRIG Z2 (Not AVR10)

Use for remotely turning on and off power amps or source equipment for Zone 2. On = 12V, Off = 0V.

Infrared (IR) connectors



The infrared inputs (**Z1 IR** and **Z2 IR**) allow the connection of external IR receivers, either when the Receiver front panel IR receiver is fully or partially obstructed or to allow the use of a remote control in Zone 2.

There are two IR inputs on the Receiver, each designed for stereo or mono 3.5mm jacks. Tip is the modulated signal, sleeve is ground.

Z1 IR

This input is intended for use with a local IR receiver when the front panel of the Receiver is blocked.

Z2 IR (Not AVR10)

This input is intended for use with an IR receiver in Zone 2 to allow remote control of Receiver from a second room.

A supplier of infra-red receivers and emitter accessories and systems is Xantech. See www.xantech.com for more information, or ask your Arcam dealer.

NOTE: The IR inputs on the Receiver are designed for modulated signals. If the external IR receiver demodulates the IR signal, it will not work. Also the unit does not provide power for external receivers on the IR jack, therefore an external power source will be required.

NOTE: Sockets referring to 'Z2' relate to connections used in multi-room installation. For more information on these connectors, see page EN-11.

Speakers

The AVR10/AVR20/AVR30/AV40 allows you to connect up to sixteen speakers. The AV40 needs additional power amplifiers for all channels. The AVR10/AVR20/AVR30 has 7 channels of amplification. 5 channels of amplification correspond to speakers installed in the front left, centre, front right, surround left, surround right. The remaining 2 channels of amplification can be assigned as:

- ☐ bi-amp the front left and right
- ☐ surround back left and surround back right
- ☐ height 1 left and right
- ☐ Zone 2 left and right

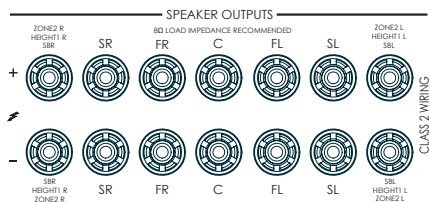
Height front left, height front right, height back left, height back right and five more additional speakers can be attached using an additional power amplifier, see page EN-16 for more information.

With the addition of correctly installed and configured height channels, Dolby Atmos for the home, DTS:X or Auro 3D brings the ultimate cinema sound experience to your home theatre to create powerful, moving audio that flows around you.

The configuration and placement of your speakers is very important. All speakers, with the exception of the subwoofer(s), should be arranged around your normal viewing/listening position. The subwoofer should be placed in a position which gives an even frequency response in all listening positions. Incorrect placement leads to bass boom in some areas. Often the only way to find a good position for your subwoofer(s) is by experimentation. A good place to start experimenting is close to a wall but at least 1m away from any corners. You can also consult your subwoofer handbook for placement suggestions.

Connecting Speakers

To connect each of the speakers, unscrew the corresponding terminals on the back of the Receiver, insert the speaker wires through the hole in each post and screw the terminals back up. Make sure that the red (positive/+) terminal of the speaker is connected to the red (positive/+) terminal on the back panel, and the black (negative/-) terminal of the speaker is connected to the black (negative/-) terminal on the back panel.



It is important that no stray strands of wire from these connections are allowed to touch another cable or the product casing. Failure to ensure this can cause a short circuit and damage your Receiver.

Ensure the unit is switched off whilst connecting speakers. Do not over-tighten the loudspeaker terminals, or use a wrench, pliers, etc., as this could damage the terminals and this would not be covered under the product's warranty.

Speaker cables

The speakers should be connected to the amplifier using good-quality, high-purity, low impedance copper cables. Cheap speaker cables should be avoided – they are a false economy and can significantly degrade the sound quality.

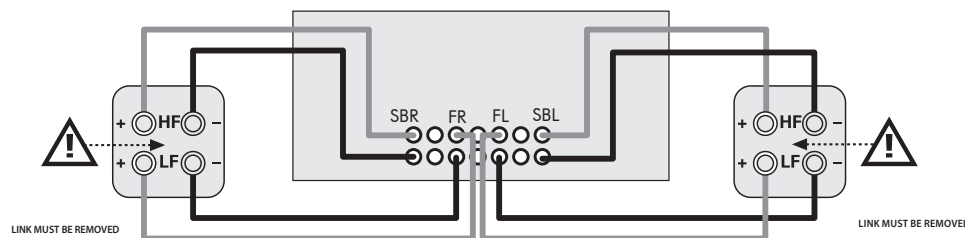
The cable runs to the speakers should be as short as practicable. Connections to the speaker terminals should always be finger tight, whether using bare wires or spade connectors.

Bi-amping the Front Left & Front Right speakers

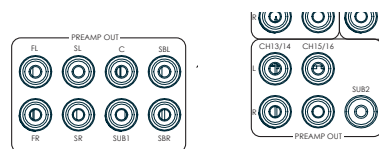
Bi-amping is the use of two amplifier channels per speaker. Bi-amping can provide better sound quality than conventional single wiring. If you do not have Surround Back speakers (i.e. you have a 5.1 surround system, not a 7.1 system) then you can use the spare Surround Back speaker outputs to bi-amplify the front left and right speakers, if your speakers support bi-amping. The spare channels can alternatively be used to power stereo speakers in another room (Zone 2).

Speakers that support bi-amping have two sets of +/- terminals per speaker, usually linked together by metal strips. These metal strips **MUST** be removed when bi-amping; failure to remove them will result in damage to the amplifier that is not covered under warranty.

To bi-amp the front left and right speakers, remove the metal strips from the speaker terminals. Connect the woofer or LF terminals to the FL and FR terminals on the Receiver. Connect the tweeter or HF terminals to the SBL and SBR terminals on the Receiver. Finally, navigate to the Setup Menu 'Spkr Types' and set the 'Use Channels 6+7' menu option to 'BiAmp L+R'; see page EN-32.



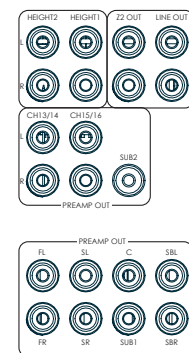
Connecting Subwoofers



The Receiver also allows up to four active subwoofers to be connected to the **SUB** or **Ch13/14/15/16** outputs. Refer to your subwoofer handbook for the correct setting up and connection procedure for your particular subwoofer(s).

Using external power amplifiers

The internal power amplifier of the Receiver can be supplemented or replaced with external power amplification, such as the Arcam PA720. Connect the **PREAMP OUT** sockets to your power amplifier inputs:



FL, FR

Connect these to the equivalent Right and Left front channels of your power amplifier.

C

Connect these to the Centre front channel of your power amplifier.

SUB

Subwoofer outputs. Connect this to the input of your active subwoofer(s), if present.

SR, SL

Surround Right and Surround Left outputs. Connect these to the Surround Right and Left power amplifier inputs.

SBR, SBL

Surround Back Right and Surround Back Left outputs. Connect these to the Surround Back Right and Surround Back Left power amplifier inputs.

Height 1 (Height Front), Height 2 (Height Back)

Height Front and Height Back. Connect these to the Height channel power amplifier inputs.

All preamplifier analogue outputs are buffered, have a low output impedance and are at line level. They are able to drive long cables or several inputs in parallel if required.

Operation

Operating your Receiver

For information display we recommend you use the OSD (On-Screen Display) on your display device whenever possible.

Switching on

Press the front panel power button in. The power LED will glow white. When initialisation is complete, the display shows the volume setting and the name of the selected input.

Please wait until the unit has finished initialising before operating the Receiver. It is recommended that if the unit is switched off, you should wait at least 10 seconds before switching the unit back on.

Standby

The Receiver has a standby mode which can be entered by pressing **STANDBY** on the remote control. When in standby mode, the display is blank and the **POWER** LED glows red.

If the unit is to be left unused for an extended period, we recommend that you disconnect it from the mains supply to save power.

To switch on from standby

Press the **STANDBY** button on the remote control, any key on the front panel (other than the power button) or rotate the volume knob.

Front panel display

The Receiver is ready for use after about four seconds.

The display window shows the currently selected source and the last selected information view setting (this information line can be changed using the **INFO** button).

The current volume setting for Zone 1 is displayed on the front panel. The volume setting for Zone 2 is displayed temporarily whenever it is adjusted.

The front panel display is also used for unit setup after pressing the **MENU** key on the front panel or remote.

Selecting a source

To select a particular source, press the **INPUT-** or **INPUT+** buttons until that source is shown on the front panel display, or (if available) press the corresponding source button on the remote. The following sources are available:

STB	Set Top Box input
GAME	Game console input
AV	Audio-Visual input
SAT	Satellite input
BD	Blu-ray Disc/DVD player input
UHD	UHD player input
PVR	Personal Video Recorder input
CD	Compact Disc player input
FM	Internal tuner input
DAB	Internal tuner input (this source is market dependent and may not be available on your Receiver)
NET	Ethernet input
USB	External USB solid-state device (e.g. pen drive) input
AUX	Auxiliary (front panel) input
DISPLAY	The Audio Return Channel (eARC) from a compliant display. Use this with a compliant television using internal TV tuners.

Most audio inputs have both analogue and digital connections. You must specify the type of connection used for each input using the '**Audio Source**' option in the 'Input Config.' menu, see page EN-31. Note that an incorrect setting will result in no sound — the default for inputs with HDMI is HDMI audio. If you are not using HDMI audio then this setting must be changed. For inputs that do not have HDMI, the default is digital audio.

The processing mode and Stereo Direct functions are remembered and recalled for each individual input.

Stereo Direct

To listen to a pure analogue stereo input, press the **DIRECT** button. The Stereo Direct mode automatically bypasses all processing and any surround functions. In direct mode, digital processing is shut down to improve the sound quality and reduces digital noise with the Receiver to an absolute minimum.

Note: when Stereo Direct mode is selected, no bass management is performed, meaning that bass signals will not be redirected to a subwoofer.

Volume control

It is important to realise that the level of the volume indicator is not an accurate indication of the power delivered to your loudspeakers. The Receiver often delivers its full output power long before the volume control reaches its maximum position, particularly when listening to heavily recorded music. In comparison, some movie sound tracks can appear very quiet, as many directors like to keep maximum levels in reserve for special effects sequences.

Headphones

To use headphones with the Receiver, plug the headphones into the **PHONES** socket in the centre of the front panel.

When headphones are plugged into the front panel **PHONES** socket, the outputs for Zone 1 are muted and the audio will be down-mixed to two channels (2.0). The two-channel down-mix is required so that the centre channel and surround information can be heard via the headphones.

Extended front panel menu

Pressing the **MENU** key on the front panel and holding it for longer than four seconds will bring up the Extended Menu, allowing you to perform the following:

Restore to factory defaults

This option allows you to restore all settings on your Receiver to the defaults that it left the factory with.

Check for update

Checks for an over-the-air firmware update (requires external network connection).

Restore secure backup

This option allows you to restore all settings to their state as saved using the 'Store secure backup' feature. This option is useful if settings are accidentally changed.

Store secure backup

This option allows you to save all the Receiver settings to a secure area of memory. The settings can be retrieved using the Restore option above.

Restore USB backup

This option allows you to restore all the settings from a file previously saved on a USB flash drive.

Store USB backup

This option allows you to save all the settings to a USB flash drive.

Region

Sets the region you are located - Europe, (RoW) US or Canada.

Change remote code

The default RC5 system code the Receiver responds to is 16. If required, for example due to another device in your system also using this RC5 system code, it can be changed to 19. The supplied remote can also be reprogrammed to use RC5 system code 19 commands, see page EN-22.

Standby mode

"Auto" uses the power-saving auto-standby feature, which will cause the unit to go into standby after 20 minutes if no signal is present or user input occurs, "manual" allows the user full control of when the unit goes into standby.

Protection sensitivity

This option allows adjustment of the protection sensitivity of the power amplifier (not AV40). Caution should be used with this setting as it is deliberately configured for maximum protection and should only be adjusted when using speakers that are "complex loads"!

Use display HDMI

If set to "no" the Receiver will ignore the EDID of the display and send all resolutions from the source through the Receiver.

Display type

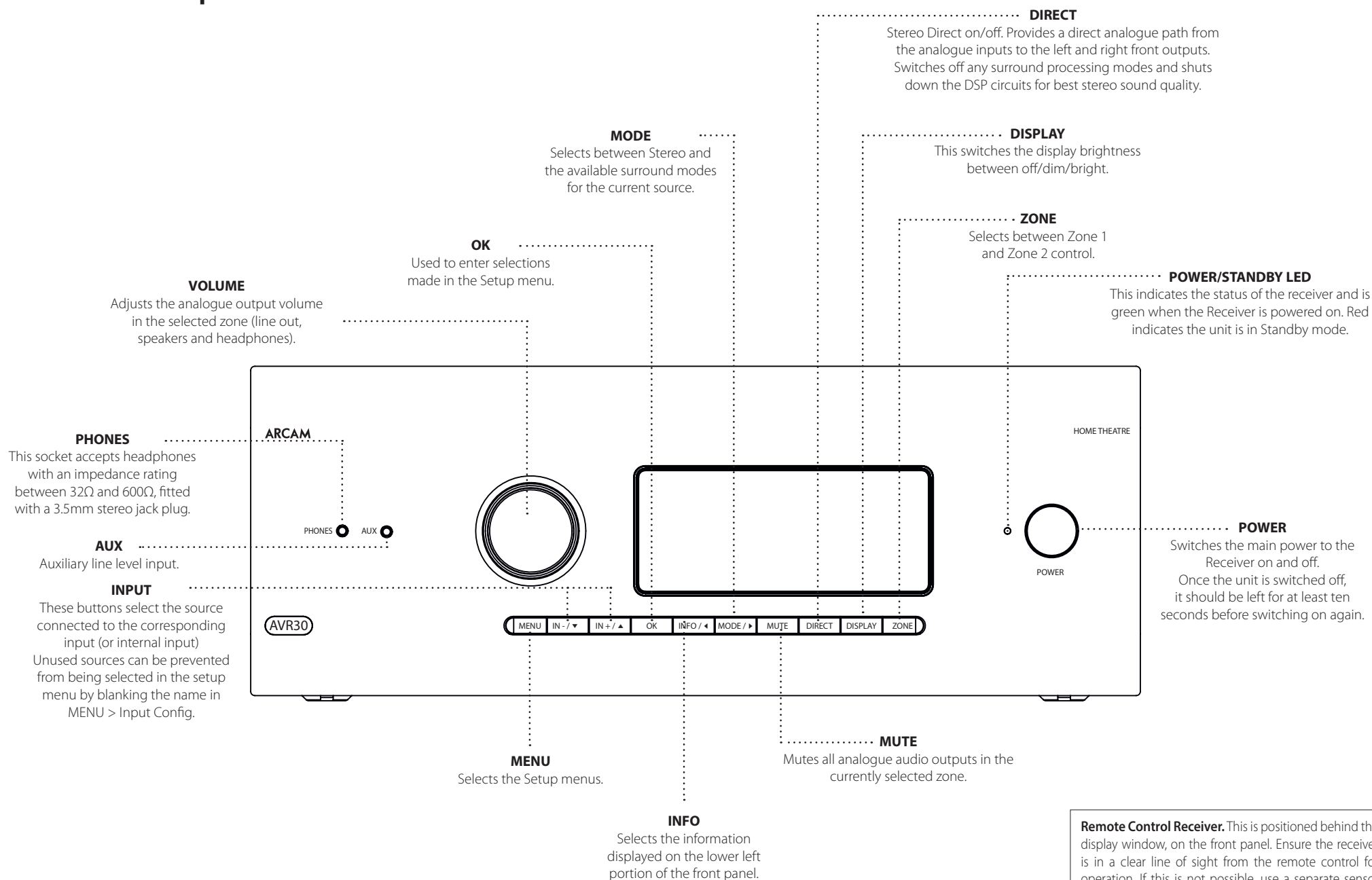
Adjusts the position of the OSD depending on if a 16:9 & 21:9 display is being used.

Updating firmware via USB

The firmware in your Receiver can be updated from a USB flash drive containing firmware update files.

You can download the latest firmware file, together with upgrading instructions, from the Arcam website (www.arcam.co.uk).

Front Panel Operation



Remote Control Receiver. This is positioned behind the display window, on the front panel. Ensure the receiver is in a clear line of sight from the remote control for operation. If this is not possible, use a separate sensor connected to the **Z1 IR** input on the rear panel.

Remote Control

The universal remote controller

The Receiver is supplied with a sophisticated 'universal' backlit remote control that can control up to eight devices. It is pre-programmed for use with the Receiver and many other Arcam products (FM/DAB tuners, CD players and BD players).

With its extensive built-in library of codes, it can also be used with thousands of third party audio-visual components – TVs, satellite and set-top boxes, PVRs, CD players, etc. See the list of codes at the back of this handbook.

It is also a 'learning' remote, so you can teach it almost any function from an old single-device remote.

Using the remote control

Please keep in mind the following when using the remote control:

- ☐ Ensure there are no obstacles between the remote control and the remote sensor on the Receiver. The remote has a range of about 7 metres. (If the remote sensor is obscured, the Z1 IR remote control input jack on the rear panel is available. Please consult your dealer for further information.)
- ☐ Remote operation may become unreliable if strong sunlight or fluorescent light is shining on the remote sensor of the Receiver.
- ☐ Replace the batteries when you notice a reduction in the operating range of the remote control.



Inserting batteries into the remote control

1. Open the battery compartment on the back of the handset. To do this, press the catch on the battery cover as indicated by the arrow on the catch and remove the battery cover.
2. Insert two 'AAA' batteries, as indicated in the battery compartment.
3. Replace the battery cover. To do this, locate the lug on the battery cover into the corresponding hole on the short edge of the battery compartment. Now press the opposite end of the battery cover (with the catch) down so that the cover is flush with the main body of the remote and the catch clicks.

Notes on batteries:

- ☐ Incorrect use of batteries can result in hazards such as leakage and bursting.
- ☐ Do not mix old and new batteries together.
- ☐ Do not use non-identical batteries together – although they may look similar, different batteries may have different voltages.
- ☐ Ensure the plus (+) and minus (-) ends of each battery match the direction indicated in the battery compartment.
- ☐ Remove batteries from equipment that is not going to be used for a month or more.
- ☐ When disposing of used batteries, please comply with governmental or local regulations that apply in your country or area.

Useful information


Backlight

A backlight comes on for eight seconds whenever a key is pressed. This helps you use the handset in subdued lighting conditions.

LED blinks

Short blinks indicate a valid key press.

Multiple short blinks convey information (such as a device code) or signal the beginning and successful completion of a programming sequence.

The symbol  is used in the manual to indicate an LED blink.

Timeouts and unassigned keys

Time out – After 30 seconds the remote exits the programming state and returns to normal operation.

Stuck key timeout – After any key is pressed continuously for 30 seconds, the remote stops sending IR transmission to conserve battery life. The remote remains off until all keys are released.

Unassigned keys – the remote ignores any unassigned key presses for a particular Device Mode and does not transmit IR.

Low voltage indicator

When the batteries are running down, the backlight flashes briefly whenever you press a button.

If this happens, fit two new AAA alkaline batteries as soon as possible.

Device Mode/Source keys

As the remote can control your Receiver as well as a range of other equipment: many of the buttons have more than one function depending on the 'device mode' selected on the remote control.

The Device Mode keys (shown below) select the source on the Receiver. If one of these keys is pressed briefly, a command is transmitted to change the source on the unit. Also the functionality of the remote control changes to operate the selected source device; it's like having a bundle of different remotes in your hand!



	Internal FM or DAB tuner input
	Auxiliary input
	Ethernet input (e.g. Internet radio)
	Bluetooth input
	Audio-visual input
	Satellite input
	Personal Video Recorder (or Digital Video Recorder) input
	Games console input
	Blu-ray Disc or DVD player
	Compact Disc player input
	Set Top Box decoder input
	UHD player input

Each Device Mode changes the behaviour of many of the remote keys to control the source device appropriately. For example: in **CD** mode plays the previous CD track, but in **AV** mode issues the TV 'channel down' command.

The remote remains in the last selected Device Mode so it is not necessary to press a Device Mode key before every command key if all you are doing is playing or skipping tracks on a CD, for example.

Navigation keys



The Navigation keys steer the cursor in Setup menus or on-screen menus. They also replicate the navigation functions of original remotes supplied with other home entertainment devices in your system. **OK** confirms a setting.

Volume control

By default, the remote is set up so that the volume control and mute buttons always control the volume of the Receiver, regardless of which Device Mode the remote is currently set for. This is known as volume 'punch through'.

For example, if you are listening to a CD, you will probably have the remote in **CD** Device Mode to control the CD player. You can use the volume controls on the remote directly to adjust the volume of the Receiver without first having to press **AMP** to put the remote into **AMP** Device Mode. The volume buttons 'punch through' the **CD** Device Mode on the remote to the **AMP** Device Mode.

Volume 'punch through' can be disabled individually for any Device Mode if desired.

Customising the remote

The remote offers a Code Learning feature that allows you to copy up to 16 functions from an original remote control onto the remote keypad. For details of this, and other customisation features, see "Customising the Remote" on page EN-22.

The remote complies with Part 15 of the FCC rules

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet or a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

Customising the Remote

Code learning

The supplied remote comes with a complete library of pre-programmed codes. After you have set up the remote for your device, you may find that there are one or more functions on your original remote which do not have a place on the keypad. For convenience, the remote offers a Code Learning feature that allows you to copy up to 16 functions from an original remote control onto the remote keypad.

Before you start, make sure that:

- The original remote control is working correctly.
- The remotes are not pointing at your device.
- The remotes have fresh batteries.
- The remotes are not in direct sunlight or under strong fluorescent lights.

NOTE

Learned functions are mode-dependent. You could assign up to eight different functions to a single key – a separate learned function for each mode.

Direct code setup (Method 1)


The first method is to program the remote with the 3-digit code number for the device you wish to control – see “device code tables”. Make a note of the suggested number or numbers – the most popular code is listed first. Now power on the device.

1. Press the Device key for the product you want to set up, together with the **1** key. Hold down both buttons for three seconds until the LED stays lit.

You are now in setup mode, and you can release the buttons.

2. Enter a 3-digit code for the device.






If the 3-digit code number you entered is correct for the device, it will turn off. If it doesn't turn off, enter the next code number from your list until the device does turn off.

3. Once you have found the correct code, press the Device key again. The LED blinks three times  to confirm that the code has been successfully stored.

Library search setup (Method 2)



Library search allows you to scan through all the codes contained in the remote's memory. It can take a lot longer than the previous method, so only use this method if:

- Your device does not respond to the remote after you have tried all the codes listed for your brand.
- Your brand is not listed at all in the Device Code tables.

1. Press the Device key for the product you want to set up, together with the **1** key. Hold down both buttons for three seconds until the LED stays lit.
2. Point the remote control at the product you wish to control and press the  or  button on the navigation pad. Each time the  or  button is pressed, the code counts up (or down) one code number with a signal to power off the device.
3. Continue pressing the up or down button, in approximately one second intervals, until the device turns off. (DO NOT alternate the up and down button – you need to move in only one direction.)
4. To store the correct code, press the Device key again. The LED blinks three times  to confirm that the code has been successfully stored.


Learning setup (Method 3)

The third method involves ‘teaching’ the Arcam remote from the original remote for the device. The two remotes should be facing each other, about 10cm apart.

1. Press the Device key for the product you want to set up, together with the **3** key. Hold down both buttons for three seconds until the LED stays lit.
2. Press the button on the Arcam remote that you want to assign a command to. The LED blinks once  indicating that the remote is ready to learn the command.
3. Press and hold the appropriate key on the other remote until the LED blinks twice . This indicates the Arcam remote has learned the command from your other remote.
4. Continue learning the commands from your other remote by pressing the next button on the remote and repeating steps 2 and 3.

5. Once the remote has learned all the selected commands, press and hold the Device key you used to enter learning together with the Numeric **3** key to store the learned commands.

NOTE

If the Arcam remote LED blinks five times  there was an error in the learning process. In this case, please start the Learning Setup from the start.



The AMP and RADIO keys do not learn commands.

Important notes


- Once you start a Code Learning session, you have approximately ten seconds to conduct each step. Any longer, and a timeout means that you'll have to start the process again.
- The Learning feature is mode-specific – you can copy one feature *per mode* onto a key.
- The remote can learn approximately 16 functions in total.
- To replace a learned function, simply assign a new function to the same key.
- Learned functions are retained when you change batteries.
- If Code Learning fails, try altering the distance between the two remotes; make sure that the ambient light is not too bright.



Deleting the learned data

To delete all the learned data for a device:




1. Press the Device key for the product you want to set up, together with the **3** key. Hold down both buttons for three seconds until the LED stays lit.
2. Press and hold down the Device key for the product that you want to erase, together with the **11** key for three seconds until the LED blinks twice .
3. If no further key presses are made for 30 seconds after the LED blinks twice , the remote leaves erase mode without deleting the learned data.

NOTE














On the following pages, a single ‘blink’ of the remote's power LED is indicated by the symbol .

- If you press the Device key together with the **3** key one more time within 30 seconds after LED blinks twice , you can finish the erase mode deleting all the data learned on the Device. The LED blinks three times  to confirm.

To delete the learned data for a key for a device:

- Press the Device key for the product you want to set up, together with the **3** key. Hold down both buttons for three seconds until the LED stays lit.
- Press and hold down the key on which you want to delete the data for three seconds. The LED blinks twice . If any further key press is made, the remote escapes from erase mode without deleting the learned data.
- If any further key press is not made for 30 seconds, the LED blinks twice , the remote escapes from the erase mode automatically without deleting the learned data.
- If you press the Device key together with the **3** key again within 30 seconds after the LED blinks twice, all the data learned for that Device is deleted and you leave erase mode. The LED blinks three times  in confirmation.

Reading stored code numbers

- Press the Device key for the product that you want to set up together with the **4** key. Hold down both keys for three seconds until the LED blinks.
- Press the **INFO** key and count the number of blinks (=1, =2, =3, etc.). There is a time gap between digits. (Note that '0' is represented by ten blinks:          )

Locking/Unlocking a specific Device Mode

When you first unpack your remote and insert the batteries, it is able to control certain Arcam components automatically (e.g. BD players, Amplifiers, Tuners and CD Players). We achieve this by programming specific Arcam device codes onto the relevant Device Mode keys, then locking the Device Modes so you don't reprogram them inadvertently.

If you want to override these locked default settings – to control a third-party BD player, for example – you will first need to unlock BD Mode before setting up the remote using one of the learning methods described on the previous page.

Here are the factory default settings:

Device Mode	Default status	Default codes
AMP	Locked	001 (Arcam code 16)
BD	Locked	001 (Arcam)
AV	Unlocked	108 (Philips TV)
UHD	Unlocked	Code learning only
GAME	Unlocked	Code learning only
STB	Unlocked	030 (Bush/Goodmans/Grundig, from SAT database)
SAT	Unlocked	128 (Sky+ Digital, from SAT database)
PVR	Unlocked	018 (Humax PVR, from SAT database)
CD	Locked	001 (Arcam)

Alternative codes are available for multi-room solutions, or in the case of code clashes with other manufacturer's products.

For example:

AMP (system code 19): 002

Note that you need to change the system code on the product you wish to control, as well as the remote.

- AMP, BD and CD are the Device keys that may be Locked or Unlocked.


Lock and Unlock are toggles (they change from Lock to Unlock to Lock, etc.).


- Press and hold the Device and **6** keys together for three seconds.


The power LED stays lit, showing that it is in Lock/Unlock setup mode.

- If there is no further key input for 30 seconds, the LED goes off and the remote leaves Lock/Unlock setup mode.

- To toggle the status of a device and then verify the status of a device, press the **3 6 9** keys in sequence:

If you have locked the device, the LED blinks three times: .


If unlocked the device, the LED blinks five times: .

- If you press a valid Device key within 30 seconds, the LED blinks three times:  and the remote leaves Lock/Unlock setup mode.

Controlling the volume of other devices

By default, the volume keys and mute key control the amplifier volume.









You can configure these buttons so they send volume commands to another device. In the following example, the volume commands are sent to a linked AV device (your television, for instance):

- Press **AV + 5** for three seconds, until the LED lights and stays on.
- Press **VOL UP**.
- Press **AV** again. The LED blinks three times .

The volume and mute keys will now send the volume commands to the TV.



To set the volume buttons to control the amplifier once more, repeat the above steps, except press **AMP** in step 3.

Hidden commands

Command	Effect
AMP + 	Sends a Power On command
AMP + 	Sends a Power Off command
AMP + OK	Sends a Zone command
AMP + 	Cycles through HDMI outputs 1, 2, 1&2.
CD + 	Sends a Power On command
CD + 	Sends a Power Off command
BD + 	Sends a Power On command
BD + 	Sends a Power Off command
BD + 	Sends a Resolution command

Factory default reset

You can reset your remote to the original factory default settings.

Press and hold both the  (home) and **MENU** keys for about five seconds until the power LED blinks five times .

All programming and setup codes that you have entered into the remote are erased and the remote returns to the original factory default settings.

Device codes

The tables that are in the final section of this Handbook list 3-figure codes for different manufacturers' devices.

Use these when setting your remote up to control your devices, as described in Direct code setup: Method 1 (see previous page).





If more than one code number is listed, try the first number. If the results are unsatisfactory, continue trying the numbers for that manufacturer to get the best 'fit' with the functionality required.




If the manufacturer of your equipment is not listed, you can try Library search setup: Method 2 (see previous page). This method allows you to scan through every code contained in the remote's memory.








AMP Device Mode

The **AMP** Device Mode button configures the remote to control the Receiver. Pressing this button does not affect the currently selected input on the Receiver.

The functionality of the remote is context sensitive for the internal sources and is described in the following table.







	Single press – Toggles Receiver power between standby and on in the current zone (zone in which the command is received). Press and hold – Forces all zones into standby, regardless of which zone the command was received in.
0....9	The number keys can be used for direct entry of numeric values
SYNC	Sync. Delays may be introduced into the video signal by video processing which causes a mismatch between the audio and video timing. You will notice this by speech sound being out of synchronization with the lip movements in the video. To compensate for this, you can adjust the lip sync delay. Press the SYNC button and use the  and  navigation buttons. Press again to exit the lip sync trim menu.
INFO	Info cycles through the information displayed on the lower left portion of the front panel display when on TUN , NET and USB inputs.
	Brings up the DTS:X dialogue control adjustment.
MENU	Displays the unit's setup menu on the On Screen Display.
POP UP	Toggles Dolby Volume on/off.
AUDIO	Toggles Dirac Live EQ on/off.

RTN	Brings up a temporary subwoofer trim control. Use the  and  navigation buttons. Press RTN again to exit the sub trim control. As this is a temporary adjustment, the sub trim level is reset to the value set in the Speaker Levels menu when the unit is turned off or put into standby.
	Toggles the mute function of the AVR.
VOL	Adjust amplifier volume.
MODE	Cycles through the available surround and downmix modes.
DISP	Cycles through the front panel display's brightness options
AMP	Resets remote to AMP mode.
DIRECT	Stereo direct on/off. Provides a direct analogue path from the analogue inputs to the left and right front outputs. Switches off any surround processing modes and shuts down the DSP circuits for the best stereo sound quality.

	Navigate the files and menus on the screen. OK selects the highlighted file or enters the highlighted menu on the screen – equivalent to 'Enter' or 'Select' on some remote controls.  Up  Left  Right  Down AMP +  Power on from standby AMP +  Standby from Power on AMP + OK select Zone 2
RED	Red button.
GREEN	Green button.
YELLOW	Yellow button.
BLUE	Blue button.
RADIO	Tuner input.
AUX	Aux input.
BT	input.
USB	USB input.
AV	AV input.
SAT	SAT input.
PVR	PVR input.
GAME	Game console input.
BD	BD input.
CD	CD input.
STB	STB input.
UHD	UHD input.

Network commands

When using the network client, the keys below are used to navigate music files in **AMP** Device Mode.

	Navigates the files on screen. OK selects/plays the highlighted file.
	Selects the previous/next track in the current playlist.
	
	Pause and playback of the current track.
	Stops playback.
RED	Adds the currently displayed radio station to the favourites list when using the network client.
GREEN	Removes the currently displayed radio station to the favourites list when using the network client.
	Returns navigation to the top level of the network client menus ('Home')

BD

BD/DVD Device Mode

The **BD** Device Mode button configures the remote to control the functions of Arcam Blu-ray Disc and DVD players, although this can be changed. Pressing this button also selects **BD** as the source.

	Toggles power between standby and on.
	Open/close disc tray.
0...9	Searches for and plays the track corresponding to the key pressed when playing a CD.
DISP	Cycles through the front panel display's brightness options.
MODE	Cycles through the repeat options (track, disc, etc.).
	Fast rewind.
	Fast forward.
	Press and release to skip back to the beginning of the current/previous track.
	Press and release to skip forwards to the beginning of the next track.
	Stop playback of a BD or DVD.
	Pause and playback of the current track.
	Start recording (on products that have this feature).
MENU	Disc menu.
POP UP	Activates BD/DVD player menu, if available.

	Navigate setup and BD/DVD programme selection menus. OK selects the highlighted file or enters the highlighted menu on the screen – equivalent to 'Enter' or 'Select' on some remote controls. Up Left Right Down BD + Power on from Standby BD + Standby from Power on BD + changes the picture resolution (for BD, only on the Home screen).
	Returns navigation to the top level of the menu ('Home').
AUDIO	Changes audio decode format (Dolby Digital, DTS, etc.).
AMP	Resets remote to AMP mode.
RED	RED button for BD
GREEN	GREEN button for BD
YELLOW	YELLOW button for BD
BLUE	BLUE button for BD.

AV

AV Device Mode

The **AV** Device Mode button configures the remote to control the functions of a television or other display device. You will need to configure this Device Mode to work with your equipment. Pressing this button also selects **AV** as the source.

	Toggles power between standby and on. (Some TVs require you to use a number key to turn them on).
0...9	Functions as original remote number key – usually for channel selection.
DISP	Display INFO or OSD (On Screen Display) function, if available.
MODE	AV; this function is TV specific.
	Channel down.
	Channel up.
INFO	Displays picture information; this function is TV specific.
POP UP	Guide.
	Navigate setup and programme selection menus. OK confirms a selection (equivalent to 'Enter' or 'Select' on some remotes).
	Returns navigation to the top level of the menu ('Home').
AMP	Resets remote to AMP mode.
RED	RED key for Text TV
GREEN	GREEN key for Text TV
YELLOW	YELLOW key for Text TV
BLUE	BLUE key for Text TV.

UHD

UHD Device Mode

The **UHD** Device Mode button selects **UHD** as the source.











The UHD page allows code learning from a dedicated UHD remote – see "Customising the Remote" on page EN-22

STB

STB Device Mode

The **STB** Device Mode button selects **STB** as the source.

If configured to work with your set top box decoder or similar device, the remote can subsequently control the device.






	Toggles power between standby and on.
0..9	Functions as original remote number key – usually for channel selection.
DISP	Display INFO or OSD (On Screen Display) function, if available.
MODE	Selects the Library or Media function.
	Rewind.
	Fast Forward.
	Channel down.
	Channel up.
	Stop playback.
	Pause and playback of the current track.
	Record.
INFO	Opens the EPG (Electronic Program Guide) on some satellite and cable set top boxes.
POP UP	Turns on the Menu function if the set top box uses this feature.
	Navigate setup and programme selection menus. OK confirms a selection (equivalent to 'Enter' or 'Select' on some remotes).
	Returns navigation to the top level of the menu ('Home').
AUDIO	Selects the Help function.
AMP	Resets remote to AMP mode.
RED	RED button for set top box.
GREEN	GREEN button for set top box.
YELLOW	YELLOW button for set top box.
BLUE	BLUE button for set top box.

SAT

SAT Device Mode

The **SAT** Device Mode button selects **SAT** as the source.

If configured to work with your satellite receiver, the remote can subsequently control the device.










	Toggles power between standby and on.
0..9	Functions as original remote number key – usually for channel selection.
DISP	Display INFO or OSD (On Screen Display) function, if available.
	Channel down.
	Channel up.
INFO	Displays programme information.
POP UP	Guide (or Setup on some set top boxes).
	Navigate setup and programme selection menus. OK confirms a selection (equivalent to 'Enter' or 'Select' on some remotes).
	Returns navigation to the top level of the menu ('Home').
RTN	Back.
AMP	Resets remote to AMP mode.
RED	RED button for Satellite.
GREEN	GREEN button for Satellite.
YELLOW	YELLOW button for Satellite.
BLUE	BLUE button for Satellite.


PVR

PVR Device Mode

The **PVR** Device Mode button selects **PVR** as the source.

If configured to work with your personal (hard disc) video recorder or similar device, the remote can subsequently control the device.

	Toggles power between standby and on.
0..9	Functions as original remote number key – usually for channel selection.
INFO	Display INFO or OSD (On Screen Display) function, if available.
MODE	Selects the Library or Media function.
	Rewind.
	Fast Forward.
	Channel down.
	Channel up.
	Stop playback.
	Pause and playback of the current track.
	Record.
MENU	Opens the EPG (Electronic Program Guide) on some satellite and cable set top boxes.
POP UP	Turns on the Menu function if the PVR uses this feature.
	Navigate setup and programme selection menus. OK confirms a selection (equivalent to 'Enter' or 'Select' on some remotes).











	Returns navigation to the top level of the menu ('Home').
AUDIO	Selects the Help function.
AMP	Resets remote to AMP mode.
RED	RED button for PVR.
GREEN	GREEN button for PVR.
YELLOW	YELLOW button for PVR.
BLUE	BLUE button for PVR.








CD

CD Device Mode

The **CD** Device Mode button selects **CD** as the source.

The button is configured to control the CD functions of Arcam CD players, although this can be changed (see "Locking/Unlocking a specific Device Mode" on page EN-23).

	Toggles power between standby and on.
	Open/close disc tray.
0...9	Searches for and plays the track corresponding to the key pressed.
DISP	Cycles through the front panel display's brightness options.
MODE	Cycles through the repeat options (track, disc, etc.).
	Fast rewind.
	Fast forward.
	Press and release to skip back to the beginning of the current/previous track
	Press and release to skip forwards to the beginning of the next track.
	Stop playback of a CD
	Pause and playback of the current track.
POP UP	In 'normal play' (i.e. the display does not show the letter P), press the  and  keys to select the track and then MENU stores the track. In 'program play' mode, the MENU key deletes the stored track.

	Navigate setup and CD programme selection menus. OK selects the highlighted file or enters the highlighted menu on the screen – equivalent to 'Enter' or 'Select' on some remote controls.  Up  Left  Right  Down CD +  Power on from Standby CD +  Standby from Power on.
AMP	Resets remote to AMP mode.
RADIO	Plays the programmed tracks.

Essential Setup

Before you use your Receiver it is essential that you enter some information into the Setup menus about your speaker configuration. This allows the Receiver to process any surround sound digital source to exactly match your system and give you the ultimate surround sound experience.

There are three pieces of vital information which are outlined in the sections: 'Speaker Types', 'Speaker Distances' and 'Speaker Levels'.

The way you enter this information manually into the Receiver is given later in the 'Setup Menus' section on page EN-30.

When calibrated using Dirac Live room equalisation the speaker levels and delays will be established automatically and applied when the equalisation is turned on, speaker types however must be manually entered. For use with equalization turned off, the speaker size, speaker distance and speaker levels settings must be entered manually. It is important to understand why these speaker settings must be entered, which is why this section is presented before the section on equalisation."

Speaker types

You need to set the type of speakers that you have connected to your Receiver:

Large	capable of full frequency range reproduction
Small	not capable of full frequency range reproduction at the low frequency end
None	speaker not present in your configuration

The terms 'Large' and 'Small' do not necessarily relate to the physical size of your speakers. As a rule of thumb, if a speaker cannot reproduce a flat frequency response down to about 40Hz (and very few can!) it is often better to consider them as 'Small' for setup purposes of home cinema.

When a speaker is set to 'Small', very low frequency sounds are redirected away from that speaker to a 'Large' speaker or a subwoofer, which are far better suited to reproducing these low frequency sounds.

Note that it is not possible to set all speakers to 'Small' unless there is a subwoofer in your speaker configuration. If you do not have a subwoofer, you will be forced to set your front speakers to 'Large'.

(Advanced users may wish to automatically override the 'Small' speaker setting for purely stereo music listening when not watching movies. This can be achieved in the 'Input Config.' menu – see page EN-31.

Crossover frequency

If you have set any speakers as being Small, then you will be required to set a value for the crossover frequency. This is the frequency below which signals are filtered away from these Small speakers and redirected to Large speakers or the subwoofer (if present). A frequency of 80Hz is often a good starting point, however you will probably have to experiment with different values to find the best value for your system or consult your speaker handbook.

Use Channels 6+7 for

If not used in the main zone, it is possible to assign the Surround Back channels to Height 1, bi-amp the Front Left/Right channels or to provide an amplified output to Zone 2.

Speaker Levels

Finally the levels of all the speakers in the system need to be adjusted to match each other at the listening position, again to create a proper surround effect. To help with this the Receiver can generate a test noise for each speaker which should be measured with a sound pressure level (SPL) meter. The meter should be set to 'C' weighting and slow response. Several smartphone/tablet apps are available which can also perform this function. The level of noise measured at the listening position from each speaker should be adjusted on the Speaker Trims page of the Setup menu so that the meter reads 75dB SPL. It does not matter what the system volume setting of the Receiver is before turning the test noise on as the volume setting is over-ridden for the duration of the speaker noise test.

There are several basic SPL meters on the market at reasonable prices aimed at home cinema enthusiasts. Check your local technology store, search online or ask your dealer.

If you do not have an SPL meter or suitable app, you can try to adjust the noise level of each speaker by ear. In this case it is not possible to adjust the speakers to the absolute 75dB SPL volume level, but you should aim for all speakers sounding equally loud. Setting speaker test noise levels by ear is not recommended as it is very difficult to do accurately, but is often better than doing nothing at all!

Speaker Distances

It is essential for the distance from each speaker to the listening position to be accurately measured and entered into the 'Setup' menu. This ensures that the sounds from the various speakers arrive at the listening position at the correct time to recreate a realistic surround effect. The distance can be entered in centimetres or inches.

Auto Speaker Setup



Dirac Live for Arcam

There is a proprietary automatic loudspeaker calibration function built into your Receiver from Dirac Research. Using a PC/MAC based application, this attempts to set the essential speaker settings for all the speakers in your system. It also calculates room equalisation (Room EQ) filter values to remove some of the worst effects of resonant frequencies in the listening room.

Your Receiver package is supplied with a calibration microphone, which should be inserted into a USB socket on a PC or MAC connected to the same network as the Receiver and positioned as directed by the Dirac Live PC/MAC application. This microphone picks up the special calibration tones generated by the speakers when Dirac Live application is run. The Receiver then analyses the signal and computes:

- ☐ speaker delays,
- ☐ speaker level,
- ☐ problem resonant frequencies in the room which need control by filtering.

To help the system be as accurate as possible when performing Dirac Live setup, there are a few guidance rules that should be followed:

- ☐ Minimise any background sounds in the listening room and other nearby rooms.
- ☐ Close all windows and doors in the listening room.
- ☐ Turn off all fans including air-conditioning systems.
- ☐ Mounting the microphone on a tripod or similar.

- ☐ Position the set up microphone pointing upwards at roughly head height when sat in the normal listening position. It is not necessary to point the microphone directly at the speaker generating the test tone, the microphone should be pointing vertically towards the ceiling. (It helps if you are able to position the microphone exactly where your head would normally be for listening, with the microphone in direct unobstructed view of all speakers.)

- ☐ If your system includes an active subwoofer, start by setting its output level/gain control to a value roughly matching the front speakers.

When activated, a calibration tone is played through each channel of the Receiver in turn, including the subwoofer channel. The calibration tone cycles round each of the speakers multiple times as the different parameters are calculated. Follow the 'progress' information on your PC/MAC.

By default, Room EQ is not applied to any of the source inputs. You should enable Room EQ on inputs you think benefit from this feature, as required, by listening when playing typical source material through each input. After being calculated, this is enabled from within the Input Config menu.

While room equalisation can help to reduce problems with listening room acoustics, it is usually far better to try to solve these problems with the room directly. Proper loudspeaker positioning, acoustic wall treatments and moving the listening position away from walls should produce far better results overall. However it may be difficult to do this in a home environment, so Room EQ is your next best choice.

Problems

We advise you to look over the reported measurements on the screen following Dirac Live setup for any obviously incorrect results, in particular to ensure the reported speakers match your configuration and that the speaker distances to the listening position appear look roughly correct. If the results are not what you expected re-run Dirac Live setup.

The Dirac Live setup function is normally quite accurate but occasionally false results can be generated. Problems may be as a result of:

- ☐ external sounds or rumbling/handling noises picked up by the microphone
- ☐ sound reflections off hard surfaces (e.g. windows or walls) close to the listening position,
- ☐ very strong acoustic resonances within the room,
- ☐ obstacles (such as a sofa) between speakers and the microphone.

If you are still experiencing difficulties or you wish to have the most accurate results for ultimate surround performance, we recommend using the manual method of establishing speaker distances and levels.

Using subwoofers

If your system includes active subwoofers you may need to set the subwoofer output level/gain control set to a higher or lower value.

Please refer to the Dirac application and quick start guide for full details of how to use the system with your Receiver.

Downloading the Dirac Live application

To download the Dirac Live PC/MAC application and quick start guide, please visit:

live.dirac.com

Using Dirac

You can store up to three Dirac EQ curves in the Receiver. Each input can use a different curve, for example a "Movie" curve on the BD input and "Music" curve on the CD input.

This can be set on a per input basis using the **AUDIO** key on the remote.

Alternatively use the Room EQ menu item in the Audio settings menu to set the curve for each input. See "Room EQ" on page EN-31.

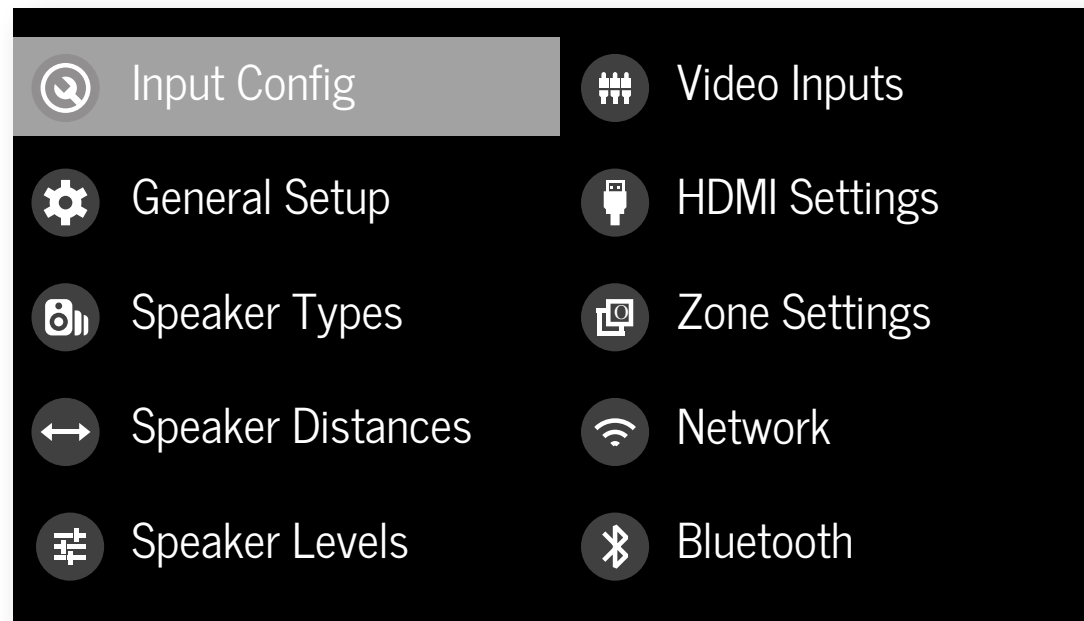
Note: When Dirac is run for the first time the curve will be applied to all inputs. Subsequent curves will not be automatically applied, use the methods above to choose the required curve for the input in question.

Setup Menus

The Setup menus allow you to configure all aspects of your Receiver. The next few pages will go through the menu items and explain their function. The Setup menus will probably look quite daunting if you are new to setting up home cinema, but the majority of them need only be configured once when you first install the system (or if your system changes or you move house!)

Entering Setup mode




To enter the setup menu, press the **MENU** button on the remote control or front panel. The front panel display shows the setup menu (pictured right).





Navigating the setup menu

... using the remote control

The setup menu can be navigated by using the cursor (arrow) keys on the remote control. This is by far the easiest method.

1. To enter the setup menu, press the **MENU** button (which is located immediately under the navigation buttons).
2. Use the  and  keys to navigate up and down the main section headings.
3. Once you have the main section that you require highlighted, use the  key to enter the section.

4. Use the  and  keys to navigate up and down the section settings in the right-hand panel. Some settings may be greyed out. These are either for information only (e.g. incoming sampling frequency) or are not currently selectable. Scroll bars on the sides of the right hand panel indicate your position in the settings list where there are more items than can be displayed at once.
5. Pressing **OK** selects a setting to change it, pressing **OK** again de-selects the setting.
6. At any time, press the **MENU** button to exit the menu. Any changes to settings are saved.

... using the keys on the front panel

The Receiver front panel controls can be used to configure the unit. Follow the instructions for using the remote control, in this case using **INPUT-** for down, **INPUT+** for up, **INFO** for left and **MODE** for right.

Input Config.

The audio and video settings on this page of the Setup menu can be tailored **specifically and independently for the currently selected input**.

When a different input is selected on the Input line, all the input-specific settings for that input are displayed below it. These settings are applied to the named Input only and are stored in memory and recalled each time the unit is powered up and whenever that input is selected.

Input – The currently selected input connectors to which the settings below relate.

Name – The display name of the input. You can change the name of any input to more closely match your setup. For example, if you had two satellite receivers, you could connect the main receiver to the Sat audio and video input connectors and change the Name to 'SAT 1'. You could then connect the second satellite receiver to the UHD audio and video input connectors, but change the UHD Name to 'SAT 2'. It is then clearer to users of your Receiver which inputs they wish to select when scrolling through.

Lip Sync – Each input can have its own setting to add a time delay between the audio and video signals to compensate for the sound and picture not being synchronised. This is normally required when video processing is used in the system for scaling or de-interlacing video. The range of lip sync delay is 0 to 250 milliseconds.

The lip sync adjustment can only correct for delayed video. If the audio is late set lip sync to its minimum.

Mode – Sets the initial audio decode mode for stereo sources on this input.

- Last Mode recalls the last used setting for this input when a stereo source was applied. See section "Two-channel source modes" on page EN-35 for more information.

MCH. Mode – Sets the initial audio decode mode for multi-channel digital sources on this input.

- Last Mode recalls the last used setting for this input when a stereo source was applied. See section "Multi-channel source modes" on page EN-35 for more information.

Bass –

Treble –

These allow you to alter the bass and treble tone controls for all currently active speakers for each individual input. For example, if your PVR source sounds a little bass light, you can always correct for this by selecting PVR on the Input line at the top of this menu and add 2 or 3dB to the Bass control. Then, whenever the PVR input is selected, the bass is automatically boosted for as long as that input is selected.

Room EQ – When the Dirac Live application is run and EQ filters are downloaded into one of the three slots available, this can be selected.

- **Not Calculated:** (Information only) There are no EQ filters, so cannot be selected.
- **Project Name:** Dirac Live Room EQ is applied to the current source and will display the name of the project from the Dirac Live application.
- **Off:** Dirac Live Room EQ is not applied to the current source.

Input Trim – Sets the maximum analogue input signal level (sensitivity) on this input before the ADC (Analogue-to-Digital converter) signal path clips. Options are 1, 2 and 4 volts RMS maximum input. The default is 2Vrms maximum.

For example, analogue sources with low output levels may benefit by choosing the 1V maximum setting. This helps maximise signal-to-noise performance of the Receiver and also helps keep the various analogue sources sounding about the same level for any given Receiver volume control setting.

Dolby Volume – Dolby Volume is an intelligent system that improves the perceived audio frequency response at lower listening levels and corrects for volume inconsistencies between sources (e.g. a rock radio station and a BD) and between programming (e.g. a TV show and advertisement breaks).

- **On:** Dolby Volume is applied to this input.

- **Off:** (default) Dolby Volume is not applied to this input.

Dolby Leveller – This setting of Dolby Volume controls how closely quiet and loud sources and programme content are matched to each other, based on the ear's perception of loudness. The range of values is 0 (minimal levelling) to 10 (maximum levelling). The default setting is 2, however we recommend experimenting with higher values if your source material is less closely matched in level. If the Volume Leveller function is set off, no level matching between sources and programme material is performed. Note however that turning the Dolby Leveller setting of Dolby Volume to 'Off' is not the same as turning the entire function of Dolby Volume to 'Off', as volume related frequency response processing is still active.

DV Calib. Offset – The Calibration Offset parameter of Dolby Volume allows you to compensate for speaker efficiencies and listening position. The default value is 0 and this should normally produce a good result when the Receiver speaker levels are set using a sound pressure level meter.

Stereo Mode – If you have configured your system to have a subwoofer, then you have the flexibility to choose how bass information is distributed between the front left/right speakers and the subwoofer when listening to stereo (two channel only) analogue and digital sources. Choose the option which gives you the most solid, even sounding bass. If you are using a subwoofer for stereo, please also see Sub Stereo below to set the level of the subwoofer. For best results test with a setup disc or live programme material. This setting can be used to override your normal speaker settings in the Spkr Types menu whenever the Receiver plays stereo material. It is quite common to find that two channel stereo music listening is best done with a slightly different sub/speaker setting than for surround movies.

- **As Spkr Types:** When an analogue or digital stereo source is played, your normal speaker configuration (as in **Spkr Types** menu) is used to reproduce the signal.

- **Left/Right:** Full frequency stereo information. All audio is sent to the front left and right speakers only without any bass redirection. You can use this setting if you consider your front left/right speakers to be able to handle the full frequency range of music. If you have set your front left/right speaker size as Small in the Spkr Types setup page, you may wish to use this option to override the setting to Large for stereo music listening, if you have full frequency range left/right speakers. It can often be beneficial to set full frequency range speakers to Small in the Spkr Types setup page for use with movies, if you have a subwoofer in your system. Doing so may deliver more impact on movie soundtracks as subwoofers are designed to handle reproduction of high bass content. However you may find that for stereo music a better overall result is obtained by not using the subwoofer and effectively treating the front left/right speakers as Large.

- **Left/Right+Sub:** Full frequency range stereo is fed to the front left and right speakers and extracted bass is sent to the subwoofer. In this case the low frequency information is effectively duplicated.

- **Sat+Sub:** Use this setting if you really do have Small satellite front left and right speakers, or if you prefer the overall sound of bass being handled by the subwoofer. Full bass management is used so that analogue and digital stereo sources are fed to the DSP where the bass is filtered off front left and right and redirected to the subwoofer.

NOTE: The Stereo Mode function is not available when using an analogue source in Stereo Direct mode.

Sub Stereo – If Left/Right+Sub or Sat+Sub is selected in Stereo Mode above, this setting adjusts the level of the subwoofer when the source is two channel stereo.

IMAX mode – Selects if IMAX mode is enabled from the incoming audio stream (auto) or forced on or off.

Auro-matic 3D – Selects the mode of the Auro-matic 3D upmixer.

- ☐ **Small:** Adjusts the upmixer for a small-sized room.
- ☐ **Medium:** (default) Adjusts the upmixer for a medium-sized room
- ☐ **Large:** Adjusts the upmixer for a large-sized room.
- ☐ **Movie:** Adjusts the upmixer for film material.
- ☐ **Speech:** Adjusts the upmixer to focus on speech intelligibility.

Auro-matic 3D Strength – Adjusts the amount of unprocessed to processed signal when using the Auro-Matic 3D upmixer.

Audio Source – Selects the particular connection type for each input. The default is HDMI for inputs with an HDMI connection and Digital for inputs without an HDMI connection. This setting must be changed if another connection is used.

Select from the list the audio type you are using on this source.

- ☐ **HDMI:** the unit is forced to use the HDMI audio input for this source.
- ☐ **Digital:** the unit is forced to use the optical (**TOSLINK**) or coaxial (**S/PDIF**) digital audio input for this source
- ☐ **Analogue:** the unit is forced to use the analogue audio input for this source.

CD Direct – Turns off the compressed audio detection mute delay and should only be used for sources that will only transmit PCM audio (e.g. a CD player).

General Setup

General information and system controls.

Source Input – (Information only) The currently selected input to which the settings below relate.

Incoming Format – (Information only) The format of the digital audio stream connected to this input, if present.

Incoming Sample Rate – (Information only) The sample rate of the digital audio stream connected to this input, if present.

Incoming Bit Rate – (Information only) The bit rate of the digital audio stream connected to this input, if present.

Dialnorm – (Information only) If a Dolby Digital audio stream is connected to this input, this is the Dialogue Normalisation setting requested by the stream.

Incoming Resolution – (Information only) Shows the incoming video resolution.

Audio Compression – Allows selection of compression which is ideal for late night listening. The compression effect increases the volume of the quiet passages and decreases the volume of the louder passages. Compression only applies to Dolby/DTS soundtrack formats that support this function.

- ☐ **Off:** (default) no audio compression is applied.
- ☐ **Medium:** compression is applied so that loud portions of a soundtrack are reduced in level. Dolby True HD stream is compressed automatically as set by the incoming stream.
- ☐ **High:** the maximum amount of dynamic range compression is applied, so that the difference between loud and quiet portions of a soundtrack is minimised.

This setting applies to all inputs when a relevant digital audio stream is detected. It is stored in memory and recalled each time the unit is powered up.

Balance – To alter the sound balance temporarily between front left and right speakers. You can alter the sound stage to either the left or the right by up to 6dB. Note that it is not possible to shift the audio signal completely over to one channel. This function resets to equal left/right balance when the input is changed.

Dolby Centre Spread – Allows adjustment of the sound field for Dolby Surround mode decoding of two-channel sources. With Dolby Surround decoding, dominant centre signals come only from the centre speaker. If no centre speaker is present, the decoder splits the centre signal equally to the left and right speakers to create a 'phantom' centre image. The Centre Spread control allows variable adjustment of the centre image so it may be heard only from the centre speaker; only from the left/right speakers as a phantom image; or from all three front speakers to varying degrees.

DTS Dialogue Control – Sets the level of the dialogue channel in compatible DTS audio streams.

Maximum Volume – Limits the maximum volume setting the system can be turned up to in the main zone. This is a useful feature to prevent accidental overdriving of low power-handling speakers (for example). It is stored in memory and recalled each time the unit is powered up.

Max On Volume – Limits the maximum volume the system operates in the main zone when it is switched on or comes out of Standby. The system comes on at this stored volume setting if the last used (possibly very loud) volume exceeds this value. It is stored in memory and recalled each time the unit is powered up.

Display on time – Sets the time that the front panel display remains illuminated after receiving a command. The default is always on.

Control – Enables or disables RS232 or IP (NET) control, a system that allows control from various third-party home automation systems. Note, only RS232 or IP control can be used, not both.

Power on – Determines how the unit powers on.

- ☐ **Stby:** in Standby mode
- ☐ **On:** On
- ☐ **Last state:** Last state (default).

Language – Select the language for the setup menu - English, French, German, Spanish, Dutch, Russian, Chinese.

Speaker Types

Settings for the types of loudspeaker you have connected in your configuration. These settings are applied to all audio inputs and are stored in memory and recalled each time the unit is powered up.

Front Left/Right –

Centre –

Surr. Left/Right –

Surr. Back L/R –

Height Front –

Height Back –

Here you set the type of speakers that you have connected to your Receiver:

- ☐ **Large:** capable of full frequency range reproduction
- ☐ **Small:** not capable of full frequency range reproduction at the low frequency end
- ☐ **None:** speaker not present in your configuration

NOTE: It is not possible to set all speakers to Small unless there is a subwoofer in your speaker configuration. If you do not have a subwoofer, you will be forced to set your front speakers to Large.

Subwoofer – configures if the dedicated sub out terminals are used for a single subwoofer channel (using the two parallel outputs).

Channel 13 & 14 –

Channel 15 & 16 –

Configures the speaker positions that channels 13, 14, 15 & 16 are used for.

Height Type – configures the type of height speakers - ceiling mounted or Dolby enabled.

Use Channels 6+7 for – If your main zone speaker set up does not include Surround Back Left and Right speakers, you can choose to use the Surround Back amplifier channels as the Height 1 amplifiers, to Bi-Amp the Front Left and Right pair, or as a stereo power amplifier for Zone 2.

Filter Slope – Configures the filter slope used for bass management - 12dB, 24dB, 36dB, 48dB/octave.

Sub Gain – configures the output level trim for all outputs configured as subwoofers in -6dB steps from 0dB to -30dB.

Speaker Distances

Calibration settings for the distances between the loudspeakers and the listening position.

NOTE: Speakers that are not present in your configuration will be greyed out.

If Dirac Live is used, these settings will be shown in time (ms) and not distance.

These settings are applied to all audio inputs and are stored in memory and recalled each time the unit is powered up.

Units – Select whether you wish to measure distances in imperial or metric units.

Front Left –

Centre –

Front Right –

Surr. Right –
Surr. Back Right –
Surr. Back Left –
Surr. Left –
Left Top Front –
Right Top Front –
Left Top Back –
Right Top Back –
Subwoofer –
Channel 13 –
Channel 14 –
Channel 15 –
Channel 16 –

As described in "Essential Setup" on page EN-28, measure the distance from each loudspeaker in your system to your ear in the main listening position and enter the values. This allows the Receiver to calculate the correct relative delay for each loudspeaker.

Speaker Levels






Calibration settings for the test noise signal level through the loudspeakers and measured at the listening position.

NOTE: Speakers that are not present in your configuration will be greyed out.

These settings are applied to all audio inputs and are stored in memory and recalled each time the unit is powered up.

Test Tone – selects the internal test tone generator or allows the use of an external test tone from the currently selected HDMI input (e.g. played from a BD).

Front Left –
Centre –
Front Right –
Surr. Right –
Surr. Back Right –
Surr. Back Left –
Surr. Left –
Left Top Front –
Right Top Front –
Left Top Back –
Right Top Back –
Subwoofer –
Channel 13 –
Channel 14 –
Channel 15 –
Channel 16 –

Use the  and  navigation buttons on the remote control to select the relevant speaker. Press  to enable/disable the calibration noise and the  and  navigation buttons to adjust the noise level from each speaker.

As described in "Essential Setup" on page EN-28, adjust the level of the test noise from each speaker so that an SPL meter at the listening position measures 75dB SPL.

Video Inputs

Settings to optionally assign a video source to each of the normally audio-only inputs.

These settings are stored in memory and recalled each time the unit is powered up.

Video Input CD –
Video Input Aux –
Video Input FM –
Video Input DAB –
Video Input Net –
Video Input BT –

The default for each of the audio inputs is 'None'. You could, however, associate 'Sat' video with FM or Digital Radio audio to receive radio commentary of a sports game with pictures from satellite coverage, for example.

HDMI Settings

The settings in this menu control the output resolution from the video processor in the Receiver. These settings are applied to all video inputs and are stored in memory and recalled each time the unit is powered up.

Zone 1 OSD – Selects whether the main zone pop-up OSD messages are On or Off. It is stored in memory and recalled each time the unit is powered up.

- ☐ When **On**, all user adjustments that are made during the general use of the Receiver are displayed on screen as well as the front panel display. This includes the adjustment of volume, subwoofer level, lip sync, tone controls, etc. It is stored in memory and recalled each time the unit is powered up.
- ☐ When **Off**, the above user adjustments will not appear on screen, only on the front panel display. This leaves the picture on your display device clear of pop-up text. However, regardless of this setting the Setup menus are always displayed on screen.

Zone 1 Out – This setting controls the output for zone 1 from either output1, output2 or both.

Zone 1 Lipsync – (Information only) Displays how much lip sync is automatically applied to the HDMI output to

compensate for video processing delays in the attached display device. Not all display devices support this function.

HDMI Audio to TV – This setting controls the audio being sent direct to the TV.

HDMI Bypass & IP – This setting controls the functionality of HDMI bypass & IP control while in standby. Selecting "Low Power" (default) will mean that IP control (network) and HDMI bypass are disabled. Selecting "HDMI & IP On" means that IP Control (network) & HDMI bypass is enabled.

HDMI Bypass Source – Selects which input is used for HDMI bypass function, either a specific input or the last input used.

CEC Control – Selects if CEC control is enabled on output 1.

eARC Control – This setting enables/disables volume control from the display.

TV Audio – This setting enables/disables auto-switching to eARC audio from the display.

Power Off Control – This setting enables/disables auto-power control from other CEC-enable devices.

Zone Settings

Lists the volume and control settings for Zone 2. These settings are applied to all audio inputs and are stored in memory and recalled each time the unit is powered up.

Z2 Input – Selects the input to be routed to Zone 2. The default is 'Follow Z1', i.e. the same source as currently selected in Zone 1.

Zone 2 Status – Selects if Zone 2 is in Standby or On.

Zone 2 Volume – The current volume in Zone 2.

Zone 2 Max. Vol – Limits the maximum volume setting the system can be turned up to in the Zone 2. This is a useful feature to prevent accidental overdriving of low power-handling speakers, for example.

Zone 2 Fixed Vol – The Zone 2 volume control can be locked at the current value for use with an external amplifier with its own volume control in Zone 2.

Zone 2 Max On Vol – Limits the maximum volume the system operates in the Zone 2 when it is switched on or comes out of Standby. The system comes on at this volume if the last used (possibly very loud) volume exceeds this value.

Connecting to a Network

Network

The Receiver is fitted with a network audio client which is capable of AirPlay 2 and Chromecast built-in as well as stored music on a network storage device such as a PC, or on NAS drive.

The wireless network is configured using the Apple AirPlay setup or the Google Home app.

SSID – (Information only) Displays the SSID the receiver is currently connected to, “wired” if a wired connection is used, or “not connected” if no connection is present.

IP Address – (Information only) IP address assigned by the DHCP server, or if not using DHCP, the IP address you have assigned to the Receiver for your network.

MAC address – (Information only) The unique address of the network card in your Receiver.

Friendly name – (Information only) The network “friendly name” of your Receiver.

Bluetooth

The Receiver is fitted with a Bluetooth audio input.

Pair Device – Makes the Receiver discoverable by Bluetooth devices.

Clear Paired Device List – Clears the Receiver’s list of paired Bluetooth devices..

Paired Devices – Displays a list of the devices paired with the Receiver.

In order to use the AirPlay and Chromecast built-in functionality of the Receiver you will need to connect it to your home network via a wireless or wired connection.

The following sections detail how to do this.

Note: Before attempting to setup a wireless connection ensure the supplied wireless antennas are fitted to the antenna socket on the rear of the Receiver.

Home Automation Control

When connected to a network the Receiver can be controlled and monitored remotely using dedicated home automation software.

The same controls are also available via the RS232 input.

Various third-party systems are available providing sophisticated control over all your entertainment devices. Contact your dealer or installer for details. The technical details of the remote control protocol are available upon request, by contacting Arcam at luxurysupport@harman.com.

For details of the available controls please refer to the control document which can be found at www.arcam.co.uk for further information.

AirPlay Setup

Wired Connection

Connect an ethernet cable to the Receiver.

To listen to audio via AirPlay on your Receiver, ensure your Apple device is connected to the same network as the Receiver and simply select the Receiver as the AirPlay audio playback device.

Note: The Receiver will appear as ARCAM modelName-xxxxxx in the AirPlay speaker menu, where xxxxxx is the last 6 digits of the units MAC address.

Wireless Connection

Ensure your Apple device is connected to the wireless network you wish to connect the Receiver to.

Open the Wi-Fi settings menu on the Apple device and select the Receiver from the “Set up new AirPlay speaker” menu.

Follow the instructions on screen. To listen to audio via AirPlay on your Receiver, ensure your Apple device is connected to the same network as the Receiver and simply select the Receiver as the AirPlay audio playback device.

Note: The Receiver will appear as ARCAM modelName-xxxxxx in the AirPlay speaker setup menu, where xxxxxx is the last 6 digits of the units MAC address.

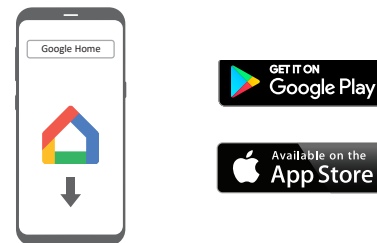
Chromecast built-in Setup

Wired Connection

Connect an ethernet cable to the Receiver.

Wired & Wireless Connection

Download and open the Google Home application.



You should be prompted that there is a device available for setup. If not simply tap “Add” followed by “Setup a Device”.

Select the Receiver and follow the instructions on screen.

To listen to cast audio from any supported application on your Receiver, ensure your device is connected to the same network as the Receiver. Tap the Chromecast built-in icon from within the application and select the Receiver as the playback device.

Note: The Receiver will appear as modelName-xxxxxx in the setup menu, where xxxxxx is the last 6 digits of the units MAC address.

Decoding Modes

Introduction

Your Receiver provides all the key decoding and processing modes for analogue and digital signals, including the latest high definition audio formats over HDMI.

Modes for digital sources

Digital recordings are usually encoded to include information about their format type. The Receiver detects automatically the relevant format in a digital signal – such as Dolby Atmos, TrueHD, Dolby Digital Plus, DTS:X, DTS-HD Master Audio, Auro 3D, Dolby Digital, or DTS – and switches in the appropriate decoding.

Modes for analogue sources

Analogue recordings do not contain information about their encoding formats, so the desired mode – such as Dolby Surround – needs to be selected manually.

Mode memory

Dolby Digital or DTS audio (including the high definition formats) can be output in two mix modes, selected using the **MODE** button:

- ☐ Surround (e.g., five main channels plus a subwoofer for a 5.1 source)
- ☐ Stereo downmix.

Two-channel audio, regardless of whether it is analogue or digital can also be output in two mix modes, selected using the mode button:

- ☐ Surround (e.g., Dolby Surround, DTS Neural:X, etc.)
- ☐ Stereo.

The Receiver stores the settings for each source. Thus the decoding mode for the following groups of source material can be stored independently:

- ☐ Dolby Digital (multi-channel) and DTS source material
- ☐ Two channel Dolby, PCM or Analogue source material

Two-channel source modes

The following decoding and surround modes are for creating multi-channel stereo modes from 2-channel sources. They are available on the Receiver for standard and high definition Dolby Digital 2.0, DTS 2.0, PCM or analogue sources:

Stereo –

16 Channel Stereo –

Dolby Surround –

Dolby Virtual Height -

DTS Neural:X -

DTS Virtual:X -

Auro-matic 3D -

Stereo

In this mode the Receiver works as a conventional high quality audio amplifier. Note that if the subwoofer is enabled in stereo mode, then some processing of the signal is carried out.

- ☐ **Stereo Direct:** this achieves the most direct signal path if an analogue connection is present.
- ☐ **16 Channel Stereo:** this produces an output from all speakers by copying the left output to all left speakers and the right output to all right speakers. The centre speaker outputs a mix of left and right.

Dolby Surround

Dolby Surround allows the Receiver to derive up to 16 outputs from a two or multi-channel source to take better advantage of all amplifiers and speakers in your setup.

Dolby Virtual Height

Dolby Virtual Height creates an immersive audio experience by virtualising height content over traditional speaker configurations without the need for height speakers. Note - this mode is NOT available if height speakers are selected.

DTS Neural:X

DTS Neural:X is an advanced up-mixer that renders up to 7.1.4 channels of immersive audio from nearly any lower channel count content.

DTS Virtual:X

DTS Virtual:X creates an immersive audio experience by virtualising height content over traditional speaker configurations without the need for height speakers. Note - this mode is NOT available if height speakers are selected.

Auro-matic 3D

Auro-matic 3D creates an immersive audio experience by creating additional channels from the incoming audio to match the available output channels, enhancing the listening experience.

Multi-channel source modes

Digital multi-channel source material is normally provided as '5.1 audio'. The '5.1 channels' comprise of: left, centre and right front speakers, two surround speakers and a low frequency effects (LFE) channel. Since the LFE channel is not a full range channel, it is referred to as '1'.

Surround systems decode and reproduce the 5.1 channels directly. The DTS-ES matrix enhanced decoding system creates one extra rear channel from information buried in the two surround signals of the 5.1 source. The ES enhanced system is sometimes referred to as a '6.1' system. This extra surround back channel is normally reproduced through two separate loudspeakers, creating a '7.1' system.

DTS-ES discrete is a true '6.1' source, with six discretely encoded channels, plus the '1' LFE channel.

Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS:X, DTS-HD, Auro 3D are high-resolution surround formats found on Blu-Ray discs

Decoding modes

The modes given in the following table are available for multi-channel digital sources.

Special modes such as DTS-ES 6.1 discrete, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos, DTS:X, DTS-HD and IMAX® ENHANCED, Auro 3D are only available from the correct source material.

High resolution audio sources	
Dolby Atmos	Dolby Atmos content is mixed as audio objects instead of traditional channels, so can take full advantage of the number and placement of your speakers.
Dolby TrueHD	Provides up to 7.1 full channels at 96kHz, 24bit resolution, with potentially no losses in the compression process. Data rates can be up to 18Mbps.
Dolby Digital Plus	Provides up to 7.1 discrete channels of audio with less compression than traditional Dolby Digital encoding. Data rates can be up to 6Mbps.
DTS-HD Master Audio	Provides up to 7.1 full channels at 96kHz, 24bit resolution, with potentially no losses in the compression process. Data rates can be up to 24.5Mbps.
DTS:X®	<p>DTS:X is a decoder package that renders immersive content which has been encoded with DTS:X encoding. DTS:X content consists of audio objects or a combination of audio channels and objects. The DTS:X decoder package also plays back legacy DTS formats including DTS-HD Master Audio lossless and lossy streams.</p> <p>Supports greater than 7.1 channel output configurations (including height speakers)</p> <p>Provides “Dialogue Control” so consumers can adjust the sound to their preference or the listening environment</p> <p>Remaps any DTS content to any speaker layout</p> <p>Supports Blu-ray Disc (BD), DVD and streaming media formats, and legacy streams up to 192kHz.</p> <p>Includes Neural:X, the latest upmixing/downmixing technology from DTS.</p>
IMAX ENHANCED	IMAX® Enhanced products meet the highest level of standards, ensuring the best color, contrast, clarity and sound on the market. These are products endorsed by IMAX to fully deliver the most immersive at-home entertainment experience and leverage the full quality and scale of IMAX Enhanced content. The IMAX Enhanced program introduces a new standard in home entertainment.
AURO 3D	AURO 3d is a decoder package that renders the audio at three levels - ear level, height level and the “Voice of God” level, creating an immersive sphere of audio.

For Dolby Digital sources	
Dolby Digital 5.1	Dolby Digital 5.1 sources deliver sound with five discrete full-range channels; left, centre, right, surround left, surround right, plus LFE channel.
Dolby Digital Stereo Downmix	Provides a stereo downmix of the source material for use with headphones.
Dolby Digital 5.1 + Dolby Surround	This mode is used to derive information for the individual surround back channels from the surround channels, using the Dolby Surround decoder.
For DTS sources	
DTS 5.1	Less common than the Dolby Digital format, but generally recognised within the audio industry as being of superior sound quality. DTS 5.1 delivers surround sound with five full range channels plus an LFE channel.
DTS 5.1 Stereo Downmix	Provides a stereo downmix of the source material for use with headphones.
DTS-ES 6.1 Matrix	This is a 6.1 channel format based on DTS 5.1. It has the sixth channel matrix encoded into the surround left and surround right channels. The sixth channel is a surround centre channel and is directed to the surround back left and surround back right speakers.
DTS-ES 6.1 Discrete	This is a true discrete 6.1 channel sound format. DTS-ES discrete mode operates only on sources with DTS-ES 6.1 discrete audio encoding.
DTS96/24	Provides up to 5.1 channels of audio at 96kHz, 24bit resolution for superior sound quality compared to standard DTS 5.1

Tuner Operation

The Receiver is fitted with an FM/DAB/DAB+ (digital radio) tuner. DAB broadcasts are not available in all locations.

This section deals with tuner operation, for information on setting up the tuner and installing aerials, see page EN-13.

When a tuner input is selected, the OSD shows a list of radio presets plus an information panel giving all available information about the current frequency (for FM) or station (for DAB).



The front panel will also give the same information, pressing the **INFO** key will cycle through the various items of information:

FM
<input type="checkbox"/> Processing mode (default)
<input type="checkbox"/> Radiotext (if available)
<input type="checkbox"/> Programme type (if available)
<input type="checkbox"/> Signal strength
DAB
<input type="checkbox"/> Processing mode (default)
<input type="checkbox"/> Radiotext (if available)
<input type="checkbox"/> Programme type
<input type="checkbox"/> Signal quality
<input type="checkbox"/> Bit-rate of transmission

Tuning/Channel Selection

When switching to the internal **TUNER** source, the Receiver enters the last used tuner band, be it FM or DAB. Repeatedly pressing **RADIO** cycles through the available tuner bands on your Receiver.

FM analogue radio


Frequency tuning on FM radio is performed using the  and  buttons on the remote control in **TUN** device mode. Individual presses move the frequency down and up one step. If you press and hold either of the tuning buttons for two seconds, the tuner scans to the next strong signal. You can stop a scan at any time by pressing one of the tuning buttons again.





In Europe, the internal FM radio is capable of receiving RDS (Radio Data System) radiotext signals that are transmitted on some stations. The RDS information typically includes the radio station name, the music or speech genre as well as additional information related to the current programme. On music stations this is often information on the currently playing track.

DAB digital radio




Digital Audio Broadcasting (DAB) radio is becoming more widely available. See www.worlddab.org/country_information for information on DAB availability.



You will need to scan for available stations before being able to listen to them.

To scan for DAB stations, first select the DAB tuner then press and hold  until the display indicates scanning has started. The Receiver will then scan all the DAB radio frequencies and compile a list of the stations that are available.



When the scan is complete, you can scroll through the station list using the  and  buttons on the remote control. To listen to the currently displayed station press the . If you do not press  within two seconds, the display will revert to displaying the currently playing station.

Saving and selecting Presets

Preset selection uses the  and  keys on the remote to browse and  to select the preset when the remote is in **TUN** device mode.

Up to 50 presets can be stored and these can be from any band, for example Preset 1 could be an FM station, preset two a DAB station, etc. Pressing the **OK** key causes the next available preset number to be displayed, then pressing the **OK** key again stores the current frequency/channel in that preset. If a different preset number is required, press the  and  keys until the desired number is displayed before pressing the **OK** key for a second time.

Deleting Presets

When in tuner browse mode (using  and  to scroll through the presets), the yellow button on the remote is used to delete the currently highlighted (but not playing) station or frequency.

Troubleshooting

Problem	Check the following
There are no lights on the unit	<ul style="list-style-type: none"> <input type="checkbox"/> The power cord is plugged into the receiver and the mains socket it is plugged into is switched on. <input type="checkbox"/> The power button is pressed in. <input type="checkbox"/> If a red led is present, the receiver is in standby mode. Press any button on the front panel or the standby button on the remote control.
The unit responds erratically or not at all to the remote control	<ul style="list-style-type: none"> <input type="checkbox"/> There are fresh batteries in the remote control. <input type="checkbox"/> The front panel window is visible and you are pointing the remote control towards it.
The front panel display is blank	<ul style="list-style-type: none"> <input type="checkbox"/> The display hasn't been turned off. Press the DISPLAY button on the front panel or remote control.
No picture is being produced	<ul style="list-style-type: none"> <input type="checkbox"/> Your viewing device is turned on and switched to display your receiver. Test by pressing the MENU button on the receiver or on the remote and look for the main menu screen on your display device. <input type="checkbox"/> The correct video input is selected on the receiver. <input type="checkbox"/> The video source is on, is operating normally, and is in 'play' mode if appropriate.
There are bright edges or 'ghosts' on the picture	<ul style="list-style-type: none"> <input type="checkbox"/> Ensure the 'sharpness' control on your display device is switched off or set to near minimum. <input type="checkbox"/> For hdmi connections, try using a shorter cable or alternatively a different brand.
No sound is produced	<ul style="list-style-type: none"> <input type="checkbox"/> The correct input has been selected. <input type="checkbox"/> The 'audio source' has been set correctly in the 'input config.' Menu <input type="checkbox"/> The source equipment is on, is operating normally and is in 'play' mode if appropriate. <input type="checkbox"/> The volume is turned up to a reasonable level and the receiver is not in mute mode.
The sound is poor or distorted	<ul style="list-style-type: none"> <input type="checkbox"/> You have not excessively increased the input sensitivity (i.e. Reduced the maximum input signal voltage) in the input config. Menu if an analogue input is being used. <input type="checkbox"/> You have selected the correct size of speakers to suit your system in the setup menu.

Problem	Check the following
Sound only comes from some of the speakers	<ul style="list-style-type: none"> <input type="checkbox"/> You have an appropriate surround source selected and playing. <input type="checkbox"/> The bd/dvd disc is encoded in the appropriate format, and the correct format has been selected in the disc start menu of the bd player (if applicable). <input type="checkbox"/> The bd/dvd player has been set to output 'bitstream' audio on the digital output. <input type="checkbox"/> The display window indicates that the disc you are playing is a multichannel recording (you may need to press the INFO key several times until you get to the 'incoming format' display). <input type="checkbox"/> All the speakers are correctly connected to the speaker terminals and are secure. <input type="checkbox"/> You have not selected 'stereo' as the decoding mode. <input type="checkbox"/> Your speaker balance is correct. <input type="checkbox"/> You have configured the receiver to include all the speakers in your system.
Unable to select Dolby or DTS decoding modes	<ul style="list-style-type: none"> <input type="checkbox"/> The receiver can only apply dolby and dts decoding to sources which have been encoded in the same format. <input type="checkbox"/> Check that: <ul style="list-style-type: none"> <input type="checkbox"/> Digital source is selected and connected. <input type="checkbox"/> The source is playing appropriately encoded material. <input type="checkbox"/> The bd/dvd disc is encoded in the appropriate format and that the correct format has been selected in the disc start menu of the bd player (if applicable). <input type="checkbox"/> The bd/dvd player has been set to output 'bitstream' audio on the digital output.
When playing a Dolby BD/DVD, the AV selects Dolby Surround	<ul style="list-style-type: none"> <input type="checkbox"/> You have a digital connection from your bd/dvd player. <input type="checkbox"/> Sometimes dolby bd/dvd discs contain material at either the beginning or the end of the main movie that is not in full 5.1 Format, but in two-channel.
Hum on the analogue input	<ul style="list-style-type: none"> <input type="checkbox"/> All cables are making a good connection. If necessary withdraw the cable from the connector and plug it fully in again (turn the power off before doing this). <input type="checkbox"/> The connections inside the source cable connector are not broken or badly soldered. <input type="checkbox"/> If the hum originates only when one particular source component is connected, that an aerial cable, or dish connection to this source is ground isolated. Contact your installation contractor.

Problem	Check the following
There is radio or television reception interference	<ul style="list-style-type: none"> <input type="checkbox"/> Where the interference is coming from. Switch off each source component in turn, then any other equipment. Most electronic equipment does generate low levels of interference. <input type="checkbox"/> Try re-arranging cabling from the nuisance source away from other cabling. <input type="checkbox"/> Ensure that the cabling used is high quality, specified for its purpose, and is properly screened. <input type="checkbox"/> If the problem persists, contact your dealer.
The source switching changes randomly or freezes on one source	<ul style="list-style-type: none"> <input type="checkbox"/> There are no static or impulse interference problems caused by nearby power equipment switching, e.G., Heating or air conditioning control. Switch the receiver off, wait ten seconds, then switch it on again to clear an operating problem. Contact your installer if the problem returns or persists. <input type="checkbox"/> There is no direct sunlight shining on the infra-red detector behind the front panel display.
Volume is always too loud when I turn on	<ul style="list-style-type: none"> <input type="checkbox"/> The 'max on volume' setting is not set too high.
If files on a NAS drive cannot be played	<ul style="list-style-type: none"> <input type="checkbox"/> The files are in a compatible format. <input type="checkbox"/> The computer is connected via a network and not usb – the receiver usb port cannot be used for a direct connection to a computer
If you cannot connect to a wired network	<ul style="list-style-type: none"> <input type="checkbox"/> The ethernet cable you are using is correctly connected between the receiver and the network hardware. <input type="checkbox"/> The network is set up for fixed ip addressing and you have the receiver set to use dhcp. <input type="checkbox"/> The network is set up for dhcp and you have the receiver set to use fixed ip addressing.
If you cannot connect to a favourite internet radio station	<ul style="list-style-type: none"> <input type="checkbox"/> The station is still broadcasting or is not congested – try again later.
If the internet radio station sound quality is poor or broken	<ul style="list-style-type: none"> <input type="checkbox"/> The radio station has a low bit rate (use the INFO key to find this). <input type="checkbox"/> The network is not slow or congested.

Specifications

AV40

Stereo line inputs	
Maximum input	4.5V rms
Nominal sensitivity	1V, 2V, 4V (user adjustable)
Input impedance	47k Ω
Signal/noise ratio (A-wtd ref 100W) normal/stereo direct	100dB/110dB
Frequency response	20Hz—20kHz \pm 0.1dB
Preamplifier outputs	
Nominal output level (single-ended/balanced)	1V RMS/2V RMS (max. 5V RMS/10 V RMS)
Output impedance	560 Ω
THD+N (20Hz—20kHz)	–100dB
Headphone output	
Maximum output level into 32 Ω	5Vrms
Output impedance	<100 Ω
General	
Mains voltage	110–120V or 220–240V, 50–60Hz
Power consumption (maximum)	50W (Thermal dissipation approx. 170 BTU/hour)
Power consumption (idle, typical)	40W (Thermal dissipation approx. 170 BTU/hour)
Power consumption (standby)	<0.5W
Dimensions W x D (including speaker terminals) x H (including feet)	433 x 425 x 171mm
Weight (net)	10.6kg
Weight (packed)	13.9kg
Supplied accessories	Mains lead Remote control with 2 x AAA batteries Manual DAB/FM aerial 3 x WiFi/Bluetooth antennas Calibration microphone USB cable
E&OE	
NOTE: All specification values are typical unless otherwise stated.	

Continual improvement policy: Arcam has a policy of continual improvement for its products. This means that designs and specifications are subject to change without notice.

AVR30

Continuous power output, per channel, 8 Ω /4 Ω	
2 channels driven, 20Hz - 20kHz, <0.02% THD	120W/200W
2 channels driven, 1kHz, 0.2% THD	140W/220W
7 channels driven, 1kHz, 0.2% THD	100W/180W
Residual noise & hum (A-wtd)	<0.15mV
Stereo line inputs	
Maximum input	4.5V rms
Nominal sensitivity	1V, 2V, 4V (user adjustable)
Input impedance	47k Ω
Signal/noise ratio (A-wtd ref 100W) normal/stereo direct	100dB/110dB
Frequency response	20Hz—20kHz \pm 0.1dB
Preamplifier outputs	
Nominal output level	1V RMS (max. 5V RMS)
Output impedance	560 Ω
THD+N (20Hz—20kHz)	–100dB
Headphone output	
Maximum output level into 32 Ω	5Vrms
Output impedance	<100 Ω
General	
Mains voltage	110–120V or 220–240V, 50–60Hz
Power consumption (maximum)	1.5kW (Thermal dissipation approx. 5200 BTU/hour)
Power consumption (idle, typical)	100W (Thermal dissipation approx. 340 BTU/hour)
Power consumption (standby)	<0.5W
Dimensions W x D (including speaker terminals) x H (including feet)	433 x 425 x 171mm
Weight (net)	18.1kg
Weight (packed)	21.4kg
Supplied accessories	Mains lead Remote control with 2 x AAA batteries Manual DAB/FM aerial 3 x WiFi/Bluetooth antennas Calibration microphone USB cable
E&OE	
NOTE: All specification values are typical unless otherwise stated.	

AVR20

Continuous power output, per channel, 8Ω/4Ω	
2 channels driven, 20Hz - 20kHz, <0.02% THD	110W/175W
2 channels driven, 1kHz, 0.2% THD	125W/190W
7 channels driven, 1kHz, 0.2% THD	90W/110W
Residual noise & hum (A-wtd)	<0.15mV
Stereo line inputs	
Maximum input	4.5V rms
Nominal sensitivity	1V, 2V, 4V (user adjustable)
Input impedance	47kΩ
Signal/noise ratio (A-wtd ref 100W) normal/stereo direct	100dB/110dB
Frequency response	20Hz—20kHz ± 0.2dB
Preamplifier outputs	
Nominal output level	1V RMS (max. 5V RMS)
Output impedance	560Ω
THD+N (20Hz—20kHz)	–100dB
Headphone output	
Maximum output level into 32Ω	5Vrms
Output impedance	<100Ω
General	
Mains voltage	110–120V or 220–240V, 50–60Hz
Power consumption (maximum)	1.5kW (Thermal dissipation approx. 5200 BTU/hour)
Power consumption (idle, typical)	100W (Thermal dissipation approx. 340 BTU/hour)
Power consumption (standby)	<0.5W
Dimensions W x D (including speaker terminals) x H (including feet)	433 x 425 x 171mm
Weight (net)	16.6kg
Weight (packed)	19.9kg
Supplied accessories	Mains lead Remote control with 2 x AAA batteries Manual DAB/FM aerial 3 x WiFi/Bluetooth antennas Calibration microphone USB cable
E&OE	
NOTE: All specification values are typical unless otherwise stated.	

AVR10

Continuous power output, per channel, 8Ω/4Ω	
2 channels driven, 20Hz - 20kHz, <0.02% THD	80W/100W
2 channels driven, 1kHz, 0.2% THD	85W/120W
7 channels driven, 1kHz, 0.2% THD	60W/85W
Residual noise & hum (A-wtd)	<0.15mV
Stereo line inputs	
Maximum input	4.5V rms
Nominal sensitivity	1V, 2V, 4V (user adjustable)
Input impedance	47kΩ
Signal/noise ratio (A-wtd ref 100W) normal/stereo direct	100dB/110dB
Frequency response	20Hz—20kHz ± 0.2dB
Preamplifier outputs	
Nominal output level	1V RMS (max. 5V RMS)
Output impedance	560Ω
THD+N (20Hz—20kHz)	–100dB
Headphone output	
Maximum output level into 32Ω	5Vrms
Output impedance	<100Ω
General	
Mains voltage	110–120V or 220–240V, 50–60Hz
Power consumption (maximum)	1.5kW (Thermal dissipation approx. 5200 BTU/hour)
Power consumption (idle, typical)	90W (Thermal dissipation approx. 340 BTU/hour)
Power consumption (standby)	<0.5W
Dimensions W x D (including speaker terminals) x H (including feet)	433 x 425 x 171mm
Weight (net)	16.5kg
Weight (packed)	19.8kg
Supplied accessories	Mains lead Remote control with 2 x AAA batteries Manual DAB/FM aerial 3 x WiFi/Bluetooth antennas Calibration microphone USB cable
E&OE	
NOTE: All specification values are typical unless otherwise stated.	

Worldwide Guarantee

This entitles you to have the unit repaired free of charge, during the first five years after purchase, provided that it was originally purchased from an authorised Arcam dealer. The Arcam dealer is responsible for all after-sales service. The manufacturer can take no responsibility for defects arising from accident, misuse, abuse, 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 the guarantee.

The warranty covers:

Parts (excluding disc drives) and labour costs for five years from the purchase date (see below for additional terms and conditions). After five years you must pay for both parts and labour costs.

*Disc drives (of any type) are covered under this warranty for **three** years from the purchase date.*

The warranty does not cover battery replacement at any time.

The warranty does not cover transportation costs at any time.

Claims under guarantee

This equipment should be packed in the original packing and returned to the dealer from whom it was purchased. It should be sent carriage prepaid by a reputable carrier – **not by post**. No responsibility can be accepted for the unit whilst in transit to the dealer or distributor and customers are therefore advised to insure the unit against loss or damage whilst in transit.

For further details contact Arcam at luxurysupport@harman.com.

Problems?

If your Arcam dealer is unable to answer any query regarding this or any other Arcam product please contact Arcam Customer Support at the above address and we will do our best to help you.

On-line registration

You can register your product on-line at www.arcam.co.uk.

device code tables

tablas de dispositivos código

tableaux des codes d'unité source

Таблицы устройства код

code-tabelle für fremdgerät

codici remot

tabellen apparaatcode

장치 코드표

Amplifier

Adc	007
Adcom	082 092 225 161 269 356
Aiwa	170 018 104 202 203 213 211 188
Akai	189
Amc	125 126 127 281 282
Angstrom	142
Anthem	335 337
Arcam*	001 002 141 418
Atlantic Technology	342
Audio File	071
Audio Matrix	167
Audio Technica	134
B & K	096 097
Bose	070 170 224 347 409 460 903 906
Boston Acoustics	447
Brix	555
Bryston	023
Cambridge Audio	522 523 525 630 683 684 552
Carver	006 028 061 071 201 214 226 185 022 077 284
Cinema Sound	134
Citation	148 272
Clarion	026
Classe	537 410 411
Delphi	515
Denon	109 215 230 234 330 801
Dvico	802
Elan	057 290
Enlightened Audio	099 098
Escient	368 451
Fisher	047 214 182 297
Flextronics	378
Fosgate Audionics	231 342
GE	056
Goldstar	008
Harman Kardon	231 233 153 154 118 318
Hitachi	020
Integra	275 781
Jamo	398
Jcpenney	216
Jensen	058
JVC	163 191 114 279 291
Kenwood	026 066 145 192 182 005 280 374
Kilh	331
Klipsch	042 043 081 687
Koss	216
Krell	072 376 384
Kyocera	007
Lexicon	120 235 236 237 357 360
Linn	124 377
Loewe	904 905 907 908 909

Luxman	139 052 165 115 004 009
LXI	056
Magnavox	086 164 152 208
Marantz	006 028 031 040 063 185 479 251 265 119 289
Mcintosh	238 286
Meridian	100 012 013
Mitsubish	242 243 204
Mondial	157 158 042 043 081 112
Musical Fidelity	647 648
Myryad	276 293
Nad	113 283 478 479
Naim	533 534 535
Nakamichi	040 244 245 172 183 287
NEC	176
Niles	403
Onkyo	017 046 108 080 209 275
Optimus	026
Outlaw	342
Panasonic	032 195 219 177 292 383
Parasound	129 130 132 261 294 295 333 334
Philips	249 250 251 063 119 805
Pioneer	014 044 069 168 116 035 078 198 480
Polkaudio	515
Primare	461 462 463 464 465
Proceed	144 268
RCA	010 048 117 156 067 288
Realistic	019 056 073 075 095
Rotel	074 083 085
Russound	379 391 392
Samsung	016 804
Sansui	040 048 110 119 065 228
Sanyo	047
Scott	019 091
Sharp	026 094 026 175
Sherwood	024 102 106 447
Sirius	555
Sony	018 247 248 166 101 184 218 271 369 372 380
SSI	068
Sugden	430
Sunfire	344 345 346
Systemline	759
Teac	005 019 049 040 212 217
Technics	122 176 193 219 178 177 200 257 262

Theta Digital	136
Toshiba	060 087 198 278
XM Satellite Radio	515
Yamaha	026 253 169 067 173 264 232 089 264 274 285 373 803 644
Zenith	143 210

CD

Adcom	062 042
Aiwa	089 170 187
Akai	202
Amc	231 232
Arcam	001 238 275
Audio Access	119 147
Audio Ease	165
Audio Technica	046
California Audio	147 008
Cambridge Audio	268
Carver	185 041 050 067 107 130 134 135 138 139 203 167
Classe	267
Creek	159
Denon	002 123
Emerson	042
Fisher	050 185 134 008
Genexxa	010
Goldstar	080
Harman Kardon	033 047 208
Hitachi	042 175
Inkel	130
Insignia	298
Integra	030 273
Jcpenney	141
Jensen	158
JVC	004 022 136 163 213 214 242 243
Kenwood	185 007 023 055 071 072 142 137 254
Krell	241 255
Kyocera	005
Linn	295
Loewe	256
Luxman	011 028 070 249 252
Magnavox	107
Marantz	041 051 077 107 209 246
Mcintosh	212 247
Memorex	010
Mission	107
Mitsubishi	179
Mondial	147
Musical Fidelity	258 284
Myryad	244 155
Nad	006 005 067 178 293
Nakamichi	217 218
NEC	062
Nikko	046
Nsm	107

Onkyo	030 038 039 168 169
Optimus	010 050 081
Panasonic	147 172 008 068 248
Parasound	233 240
Philips	041 107 246
Pioneer	010 020 174 175 176
Primare	266
Proceed	239
Proton	107
Quasar	147 008
RCA	017 042 150
Realistic	042 050 051 187
Rotel	107 161 178 250
SAE	107
Sansui	107 128 171 190 125
Sanyo	050
Sharp	026 031 051
Sherwood	051 096 112 115 119 166
Signature	033
Sony	048 081 097 126 133 177 226 164
Soundesign	251
Sumo	155
Sylvania	107
Symphonic	052
Tandy	010
Teac	051 052 233 079
Technics	147 172 184 008 068
Theta Digital	234 235
Toshiba	006 067 091 160 148
Victor	004 022
Wards	185 033
Yamaha	024 046 054 186 183 245

Note - for Arcam amps:
001 = RC5 code 16
002 = RC5 code19

DVD

Aiwa	146
Akai	281
Alpine	098
Apex Digital	087 282 115
Arcam	001
Broksonic	130
Cambridge Audio	215 323 333
Cinevision	091
Coby	260
Cyberhome	271
Denon	138 080 173 358
Durabrand	091
DVD 2000	017
Emerson	091 143
ESA	143
Fisher	147
Funai	143
GE	027
Go Video	137 091 220 221
Goldstar	091
Harman Kardon	084 140
Hitachi	101
Initial	282
Insignia	143
Integra	142 338
JBC	084
JVC	012
Kenwood	151
Kiss	279
KLH	135
Krell	104
Lexicon	148
LG	091 057
Linn	306 309
Liteon	264
Loewe	359 360
Magnavox	001 096 143 282
Marantz	083 095
Meridian	153
Microsoft	027
Mintek	282
Mitsubishi	017
Myryad	102 134
Nad	088 353
Nakamichi	103
Onkyo	076 141 142 338
Oppo	341
Optimus	107
Orion	130
Panasonic	042 138 144 150 285
Philips	083 095 166 344
Philips-Magnovox	141 001
Pioneer	023 092 099 107 108 131 304 354
Polaroid	233
Polkaudio	141 001
Primare	193 194
Proscan	027
RCA	027
Rotel	335 336
Samsung	056 165 170 137 159 275

Sansui	130
Sanyo	147
Sears	130
Sharp	094
Sherwood	245 246 247 248 249 250 345
Sony	033 118 145 126 191 286 242 243 343 340
Superscan	143
Sv2000	143
Sylvania	143
Symphonic	143
Tag McLaren	156
Tatung	102
Teac	107
Technics	042
Techwood	088
Thompson	027
Toshiba	130 141 164 188 273 356
Venturer	149
X-Box	027
Yamaha	042 089 166 138 197 334
Zenith	057 091

DVD-TV combo

Aiwa	146
Akai	281
Durabrand	143
Esa	143
Funai	143
Insignia	143
Magnavox	282
Mintek	282
Samsung	165
SV2000	143
Sylvania	143
Symphonic	143
Toshiba	130

DVD-TV-VCR combo

Emerson	143
Insignia	143
Magnavox	143
Panasonic	144
Superscan	143
Sylvania	143
Toshiba	164

DVD-VCR combo

Go Video	137
Panasonic	150
Philips	001 (VCR functions 067)
Samsung	137 159
Sansui	130

Sony	145 191
Toshiba	141
Zenith	091 (VCR functions 101)

DVD-Recorder

Cyberhome	271
Go Video	220 221
Kiss	279
Panasonic	138
Samsung	301
Sony	191
Toshiba	188

Blu-ray/HD-DVD

Denon	358
LG	091
Nad	353
Onkyo	338
Panasonic	285
Pioneer	304 354
Samsung	275
Sony	286
Toshiba	273 356
Yamaha	197

Satellite STB

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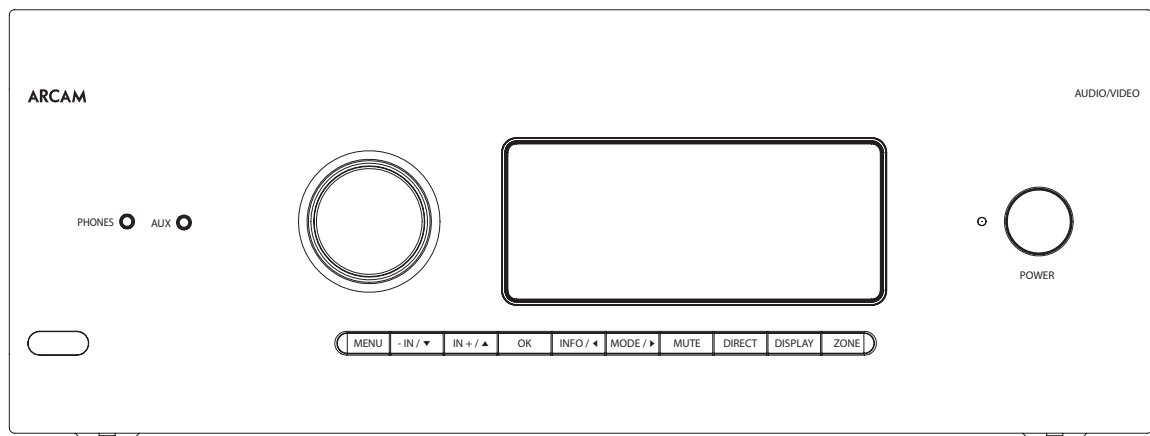
ARCAM

Custom Installation Notes:

Serial programming interface and

IR remote commands for

Arcam AVR10/AVR20/AVR30/AV40



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Applicability

Changelog

Issue A.0: First draft

Controlling via RS232/NET

Introduction

This document describes the remote control protocol for controlling via the RS232/NET interface. The AV implements virtual IR commands in order to simplify the protocol. Any operation that can be invoked using the IR remote control can be achieved over a control link using the Simulate RC5 IR command (0x08). See page 7 for details of this command. The RC5 IR code set is listed from page 39.

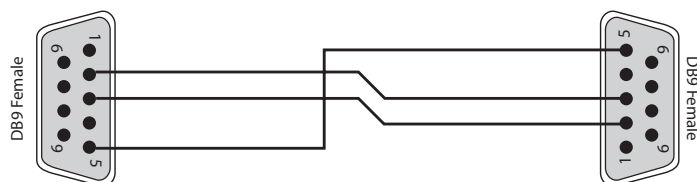
Set-up

The AV must be correctly configured for Control; by default, Control is disabled for minimum standby power consumption. RS232 control can be enabled using the front panel: press and hold the front panel **DIRECT** button for 4 seconds until "RS232 CONTROL ON" is displayed on the VFD. Alternatively, Control for RS232 or IP can be enabled using the OSD menu. Press **(AMP)** followed by **(MENU)** on the remote control in order to access the setup menu. Use the cursor keys **(←)**, **(→)**, **(↑)**, **(↓)** and **(OK)** to enter the General Setup menu and locate the option **Control**. Press **(OK)**, **(↓)** then **(OK)** to change this parameter to 'On'. IP control is via port 50000 of the IP address of the unit (in the Network Settings menu).

Conventions

- All hexadecimal numbers begin 0x.
- Any character in single quotes gives the ASCII equivalent of a hex value.
- <n> represents an unknown or variable number.

Serial Cable Specification



The cable is wired as a null modem:

Connector 1 pin	Connector 2 pin	Function
2	3	Rx ← Tx
3	2	Tx → Rx
5	5	RS232 Ground

Data transfer format

- Transfer rate: 38,400bps.
- 1 start bit, 8 data bits, 1 stop bit, no parity, no flow control.

Command and response formats

Communication between the remote controller (RC) and the AV takes the form of sequences of bytes, with all commands and responses having the same basic format. The AV shall always respond to a received command, but may also send messages at other times.

Each transmission by the RC is the following format:

<St> <Zn> <Cc> <Dl> <Data> <Et>

- St (Start transmission): 0x21 '!'
- Zn (Zone number): see below.
- Cc (Command code): the code for the command
- Dl (Data length): the number of data items following this item, excluding the ETR
- Data: the parameters for the command
- Et (End transmission): 0x0D

Each response by the AVR is the following format::

<St> <Zn> <Cc> <Ac> <Dl> <Data> <Et>

- St (Start transmission): 0x21 '!'
- Zn (Zone number): see below.
- Cc (Command code): the code for the command
- Ac (Answer code): see below.
- Dl (Data Length): the number of data items following this item, excluding the ETR
- Data: the parameters for the response of length n. n is limited to 255.
- Et (End transmission): 0x0D

The AV responds to each command from the RC within three seconds. The RC may send further commands before a previous command response has been received.

Zone numbers

The following zone numbers are defined:

- 0x01 – Zone number 1. (Zone 1 is the master zone. Commands that appear zone-less refer to the master zone)
- 0x02 – Zone number 2.

Answer codes

The following answer codes are defined:

- 0x00 – Status update.
- 0x82 – Zone Invalid.
- 0x83 – Command not recognised.
- 0x84 – Parameter not recognised.
- 0x85 – Command invalid at this time.¹
- 0x86 – Invalid data length.

¹Certain commands cannot be processed when the Setup Menu is being displayed. An answer code of 0x85 will be returned in these circumstances. Also, commands for tuner control cannot be processed when the tuner input is not selected, etc.

State changes as a result of other inputs

It is possible that the state of the AV may be changed as a result of user input via the front panel buttons or via the IR remote control. Any change resulting from these inputs is relayed to the RC using the appropriate message type.

For example, if the user changed the front panel display brightness using the DISPLAY button on the front panel, a display message (defined below) would be sent to the RC. A similar action would be taken for all other state changes (including decode mode changes).

Reserved Commands

Commands 0xF0 to 0xFF (inclusive) are reserved for test functions and should never be used.

Example command and response sequence

As an example, the command to simulate the RC5 command “16-16”, volume up:

STR	ZONE	CC	DL	Data 1	Data 2	ETR
0x21	0x01	0x08	0x02	0x10	0x10	0x0D

Assuming that the command was accepted by the AV Receiver and is being processed, the AV responds to this command with the following sequence:

STR	ZONE	CC	AC	DL	Data 1	Data 2	ETR
0x21	0x01	0x08	0x00	0x02	0x10	0x10	0x0D

AMX Duet™ Support

The AV shall be fully compatible with AMX Duet™ Dynamic Device Discovery Protocol (DDDP). The following description of Dynamic Device Discovery comes from the AMX website (www.amx.com). Dynamic Device Discovery is part of AMX's Duet™ platform, which combines the proven reliability and power of NetLinx with the extensive capabilities of the Java 2 Micro Edition (J2ME) platform. When integrating a serial or IP device from a manufacturer embedding the Dynamic Device Discovery Protocol (DDDP), Duet recognizes the device and loads the appropriate Duet module, which automatically installs the new device. AMX's NetLinx Master can then find and install the Duet device module either from a library on the master, from AMX's Web site, or from the manufacturer's Web site. Duet also allows for device swapping so that programming changes are not required when devices with DDDP are removed or replaced – a huge benefit for end users. The Duet platform is an extension AMX's InConcert® manufacturer partner program, which was developed to ensure seamless communication between partners' devices and the AMX control system.

Data is specified in the ASCII format. All ASCII characters between the quotes “” should be recognised/transmitted. “\r” is a carriage return (0x0D).

Command: “AMX\r”

AV40 Response:

“AMXB<Device-SDKClass=Receiver><Device-Make=ARCAM><Device-Model=AV40><Device-Revision=x.y.z>\r”

AVR30 Response:

“AMXB<Device-SDKClass=Receiver><Device-Make=ARCAM><Device-Model=AVR30><Device-Revision=x.y.z>\r”

AVR20 Response:

“AMXB<Device-SDKClass=Receiver><Device-Make=ARCAM><Device-Model=AVR20><Device-Revision=x.y.z>\r”

AVR10 Response:

“AMXB<Device-SDKClass=Receiver><Device-Make=ARCAM><Device-Model=AVR10><Device-Revision=x.y.z>\r”

Where

x.y.z = RS232 protocol version number.

Control 4 SDDP Support

The AV shall be fully compatible with the Control 4 SDDP discovery protocol.

Crestron Connected Support

The AV shall be fully compatible with the Crestron Connected discovery protocol.

System Command Specifications

Power (0x00)

Request the stand-by state of a zone.

Example

Command/response sequence to request the power state of zone 1 where zone 1 has power on:

Command: 0x21 0x01 0x00 0x01 0xF0 0x0D
Response: 0x21 0x01 0x00 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x00
Dl	0x01
Data	0xF0 – Request power state
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x00
Ac	Answer code
Dl	0x01
Data	0x00 – Zone is in stand-by 0x01 – Zone is powered on
Et	0x0D

Display Brightness (0x01)

Request the brightness of the front panel display.

Example

Command/response sequence for requesting the brightness of the display where the display is off:

Command: 0x21 0x01 0x01 0x01 0xF0 0x0D
Response: 0x21 0x01 0x01 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x01
Dl	0x01
Data	0xF0 – Request brightness
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x01
Ac	Answer code
Dl	0x01
Data	0x00 – Front panel is off 0x01 – Front panel L1 0x02 – Front panel L2
Et	0x0D

Headphones (0x02)

Determine whether headphones are connected.

Example

Command/response sequence to request the headphone status where the headphones are not connected:

Command: 0x21 0x01 0x02 0x01 0xF0 0x0D
Response: 0x21 0x01 0x02 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x02
Dl	0x01
Data	0xF0 – Request current headphone connection status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x02
Ac	Answer code
Dl	0x01 (Data length)
Data	0x00 – Headphones are not connected. 0x01 – Headphones are connected
Et	0x0D

FM genre (0x03)

Request information on the current station programme type from FM source in a given zone. If FM is not selected on the given zone an error 0x85 is returned.

Example

Command/response sequence to request the programme type on zone 1 where the programme type is “POP MUSIC”:

Command: 0x21 0x01 0x03 0x01 0xF0 0x0D

Response: 0x21 0x01 0x03 0x00 0x09 0x50 0x4F 0x50 0x20 0x4D
0x55 0x53 0x49 0x43 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x03
Dl	0x01
Data1	Request information source: 0xF0 – FM program type
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x03
Ac	Answer code
Dl	Data length <n>
Data1 – Data<n>	The radio programme type in ASCII characters
Et	0x0D

Software version (0x04)

Request the version number of the various pieces of software on the AVR.

Example

Command/response sequence to request the RS232 protocol version (1.4):

Command: 0x21 0x01 0x04 0x01 0xF0 0x0D

Response: 0x21 0x01 0x04 0x00 0x03 0xF0 0x01 0x04 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x04
Dl	0x01
Data	0xF0 – Request RS232 version 0xF1 – Request Host version 0xF2 – Request OSD version 0xF3 – Request DSP version 0xF4 – Request NET version 0xF5 – Request IAP version
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x04
Ac	Answer code
Dl	0x03
Data1	Echo data from command
Data2	Major version number
Data3	Minor version number
Et	0x0D

Restore factory default settings (0x05)

Force a restore of the factory default settings.

Example

Command/response sequence to restore factory defaults:

Command: 0x21 0x01 0x05 0x02 0xAA 0x0D

Response: 0x21 0x01 0x05 0x00 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x05
Dl	0x02
Data1	0xAA (Confirmation data pattern to avoid accidental restore)
Data2	0xAA (Confirmation data pattern to avoid accidental restore)
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x05
Ac	Answer code
Dl	0x00
Et	0x0D

Save/Restore secure copy of settings (0x06)

Force a restore of the secure copy of the settings. Note: If no secure copy has been made, this command will return an answer code of 0x85.

If the system is currently doing a save and another save is requested. The second save will fail silently. If a command 0x1E is being processed this command will fail with a answer code 0x85

Example

Command/response sequence to restore secure backup:
Command: 0x21 0x01 0x06 0x07 0x01 0x55 0x55 0x01 0x02 0x03 0x040x0D
Response: 0x21 0x01 0x06 0x00 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0X06
Dl	0x07
Data1	0x00 – Save secure backup 0x01 – Restore secure backup
Data2	0x55 (Confirmation data pattern to avoid accidental save/restore)
Data3	0x55 (Confirmation data pattern to avoid accidental save/restore)
Data4	Pin digit 1
Data5	Pin Digit 2
Data5	Pin Digit 3
Data7	Pin Digit 4
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x06
Ac	Answer code
Dl	0x00
Et	0x0D

Simulate RC5 IR Command (0x08)

Simulate an RC5 command via the RS232 port. An additional status message will be sent in most cases as a result of the IR command.

Example

Command/response sequence to RC5 16-17 (AVR volume down in zone 1):
Command: 0x21 0x01 0x08 0x02 0x10 0x11 0x0D
Response: 0x21 0x01 0x08 0x00 0x02 0x10 0x11 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x08
Dl	0x02
Data1	RC5 System code
Data2	RC5 Command code
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x08
Ac	Answer code
Dl	0x02
Data1	RC5 System code
Data2	RC5 Command code
Et	0x0D

Display Information Type (0x09)

Set the VFD display information type (where applicable).

The return data echoes the data sent.

Example

Command/response sequence to set the display text to show the current FM radio text with FM playing in zone 2:

Command: 0x21 0x02 0x09 0x01 0x01 0x0D
Response: 0x21 0x02 0x09 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x09
Dl	0x01
Data	For all sources: 0x00 – Set the display to Processing mode 0xE0 – Cycle through all displayable information. 0xF0 – Request the current display type If the current source is FM: 0x01 – Set the display to Radio text 0x02 – Set the display to Programme type 0x03 – Set the display to Signal strength If the current source is DAB: 0x01 – Set the display to Radio text 0x02 – Set the display to Genre 0x03 – Set the display to Signal quality 0x04 – Set the display to Bit rate If the current source is NET 0x01 – Set the display to Track 0x02 – Set the display to Artist 0x03 – Set the display to Album 0x04 – Set the display to audio type 0x05 – Set the display to rate
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x09
Ac	Answer code
Dl	0x01
Data	The current display is returned, as for the command.
Et	0x0D

Request current source (0x1D)

Request the source currently selected for a given zone.

Example

Command/response sequence to request the current source for Zone 1 where the source is set to 'SAT':

Command: 0x21 0x01 0x1D 0x01 0xF0 0x0D
Response: 0x21 0x01 0x1D 0x00 0x01 0x04 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1D
Dl	0x01
Data	0xF0
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1D
Ac	Answer code
Dl	0x01
Data	The current source in the indicated zone: 0x00 – Follow Zone 1 0x01 – CD 0x02 – BD 0x03 – AV 0x04 – SAT 0x05 – PVR 0x06 – UHD 0x08 – AUX 0x09 – DISPLAY 0x0B – TUNER (FM) 0x0C – TUNER (DAB) 0x0E – NET 0x10 - STB 0x11 - GAME 0x12 - BT
Et	0x0D

Headphone Over-ride (0x1F)

Activate/deactivate the mute relays (does not zero the volume).

Example

Command/response sequence to activate the mute relays:

Command: 0x21 0x01 0x1F 0x01 0x01 0x0D
Response: 0x21 0x01 0x1F 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1F
Dl	0x01
Data	0x00 – Headphone/Over-ride Clear (speakers muted if headphones present) 0x01 – Headphone/Over-ride Set (speakers unmuted if headphones present)
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1F
Ac	Answer code
Dl	0x01
Data1	Relay state
Et	0x0D

Input Command Specifications

Select analogue/digital (0x0B)

Select an analogue/digital audio input for the current source. Returns invalid (0x85) if OSD is showing setup screen.

Example

Command/response sequence to change the audio input to 'digital' in zone 1:

Command: 0x21 0x01 0x0B 0x01 0x01 0x0D

Response: 0x21 0x01 0x0B 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0B
Dl	0x01
Data	0x00 – Use the analogue audio for the current source. 0x01 – Use the digital audio for the current source (if available). 0x02 – Use HDMI for the current source (if available). 0xF0 – Request the audio type in use for the current source.
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0B
Ac	Answer code
Dl	0x01
Data	Response: 0x00 – Analogue audio is in use for the current source. 0x01 – Digital audio is in use for the current source. 0x02 – HDMI audio is in use for the current source.
Et	0x0D

Output Command Specifications

Set/Request Volume (0x0D)

Set or request the volume of a zone.

This command returns the volume even if the zone requested is in mute. The “Request Mute status” command can be used to discover if the zone is muted.

Response data format:
e.g. for volume 42dB: Data1=0x2A (42)

Example

Command/response sequence for setting the volume in Zone 1 to 45dB:

Command: 0x21 0x01 0x0D 0x01 0x2D 0x0D
Response: 0x21 0x01 0x0D 0x00 0x01 0x2D 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0D
Dl	0x01
Data	0x00 (0) – 0x63 (99) – Set the volume 0xF0 – Request the current volume
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0D
Ac	Answer code
Dl	0x01
Data1	Zone volume, integer value: 0x00 (0) – 0x63 (99)
Et	0x0D

Request Mute status (0x0E)

Request the mute status of the audio in a zone.

Example

Command/response sequence to request the mute status of zone 1 where zone 1 is muted:

Command: 0x21 0x01 0x0E 0x01 0xF0 0x0D
Response: 0x21 0x01 0x0E 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0E
Dl	0x01
Data	0xF0 – Request mute status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0E
Ac	Answer code
Dl	0x01
P2	0x00 – Zone is muted 0x01 – Zone is not muted
Et	0x0D

Request direct mode status (0x0F)

Request the direct mode status on Zone 1.

Example

Command/response sequence to request the Direct mode status in zone 1 where the mode is direct:

Command: 0x21 0x01 0x0F 0x01 0xF0 0x0D
Response: 0x21 0x01 0x0F 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x0F
Dl	0x01
Data	0xF0 – Request mode setting
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x0F
Ac	Answer code
Dl	0x01
Data	0x00 – ‘Direct mode’ is off 0x01 – ‘Direct mode’ is on
Et	0x0D

Request decode mode status — 2ch (0x10)

Request the decode mode for two-channel material in zone 1.

Example

Command/response sequence to request the decode mode in zone 1 where the mode is Dolby Surround Mode:

Command: 0x21 0x01 0x10 0x01 0xF0 0x0D
Response: 0x21 0x01 0x10 0x00 0x01 0x04 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x10
Dl	0x01
Data	0xF0 – Request decode mode
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x10
Ac	Answer code
Dl	0x01
Data	0x01 – Stereo 0x04 – Dolby Surround 0x07 – Neo:6 Cinema 0x08 – Neo:6 Music 0x09 - 5/7 Ch Stereo 0x0A - DTS Neural:X 0x0B - Reserved 0x0C - DTS Virtual:X 0x0D - Dolby Virtual Height 0x0E - Auro Virtual Height 0x0F - Auro-Matic 3D
Et	0x0D

Request Decode mode status — MCH (0x11)

Request the decode mode for multi-channel material in zone 1.

Example

Command/response sequence to request the decode mode in zone 1 where the mode is Dolby Surround Mode:

Command: 0x21 0x01 0x11 0x01 0xF0 0x0D
Response: 0x21 0x01 0x11 0x00 0x01 0x06 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x11
Dl	0x01
Data	0xF0 – Request decode mode
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x11
Ac	Answer code
Dl	0x01
Data	0x01 – Stereo down-mix 0x02 – Multi-channel 0x03 – DTS Neural:X 0x06 – Dolby Surround 0x0B - Reserved 0x0C - DTS Virtual:X 0x0D - Dolby Virtual Height 0x0E - Auro Virtual Height 0x0F - Auro-Matic 3D
Et	0x0D

Request RDS information (0x12)

Request RDS information from the current radio station in a given zone. If FM is not selected on the given zone an error 0x85 is returned.

Example

Command/response sequence to request the RDS information on FM in zone 1, where the response is "Playing your favourite music".

Command: 0x21 0x01 0x12 0x01 0xF0 0x0D
Response: 0x21 0x01 0x12 0x00 0x1C 0x00 0x50 0x6C 0x61 0x79 0x69 0x6E 0x67 0x20 0x79 0x6F 0x75 0x72 0x20 0x66 0x61 0x76 0x6F 0x75 0x72 0x69 0x74 0x65 0x20 0x6D 0x75 0x73 0x69 0x63 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x12
Dl	0x01
Data1	Request information source: 0xF0 – FM
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x12
Ac	Answer code
Dl	Data length <n>
Data1 – Data<n>	The radio programme type in ASCII characters
Et	0x0D

Request Video Output Resolution (0x13)

Request the Video Output Resolution of zone 1.

Example

Command/response sequence to request the video output in zone 1 where the resolution is 1080p:

Command: 0x21 0x01 0x13 0x01 0xF0 0x0D
Response: 0x21 0x01 0x13 0x00 0x01 0x05 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x13
Dl	0x01
Data	0xF0 – Request the video output.
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x13
Ac	Answer code
Dl	0x01
Data	0x02 – SD Progressive. 0x03 – 720p. 0x04 – 1080i. 0x05 – 1080p 0x06 – 'Preferred' 0x07 – Bypass 0x08 - 4k 0x09 - 8k
Et	0x0D

Menu Command Specifications

Request menu status (0x14)

Request which (if any) menu is open in the unit.

Example

Command/response sequence to request which menu is open where the ‘Trim’ menu is open on the front panel:

Command: 0x21 0x01 0x14 0x01 0xF0 0x0D

Response: 0x21 0x01 0x14 0x00 0x01 0x03 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x14
Dl	0x01
Data	0xF0 – Request the open menu state
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x14
Ac	Answer code
Dl	0x01
Data	0x00 – No menu is open 0x02 – Set-up Menu Open 0x03 – Trim Menu Open 0x04 – Bass Menu Open 0x05 – Treble Menu Open 0x06 – Sync Menu Open 0x07 – Sub Menu Open 0x08 – Tuner Menu Open 0x09 – Network menu Open 0x0A – USB Menu Open
Et	0x0D

Request tuner preset (0x15)

Request the current tuner preset number. If the tuner is not selected on the given zone an error 0x85 is returned.

Example

Command/response sequence to request the preset number where the present number is 10 on zone 1:

Command: 0x21 0x01 0x15 0x01 0xF0 0x0D

Response: 0x21 0x01 0x15 0x00 0x01 0x0A 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x15
Dl	0x01
Data	0x01 – 0x32 (1-50) number of required preset. 0xF0 – Request the current preset number.
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x15
Ac	Answer code
Dl	0x01
Data	0xFF – Currently no preset selected 0x01- 0x32: (1-50) the current preset number.
Et	0x0D

Tune (0x16)

Increment/Decrement the tuner frequency in 0.05MHz steps (FM).

The returned frequency is calculated as follows:

FM freq. (MHz) = reported freq. (MHz)

FM freq. (kHz) = reported freq. (kHz)

For these reasons, this command may return values that cannot be translated into ASCII characters.

If the tuner is not selected on the given zone an error 0x85 is returned.

Example

Command/response sequence to increment the FM tuning from 85.0MHz to 85.05MHz in zone 1:

Command: 0x21 0x01 0x16 0x01 0x01 0x0D

Response: 0x21 0x01 0x16 0x00 0x02 0x55 0x05 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x16
Dl	0x01
Data1	0x00 – Decrement tuner frequency by 1 step. 0x01 – Increment tuner frequency by 1 step. 0xF0 – Request the current tuner frequency.
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x16
Ac	Answer code
Dl	0x02 (Data length)
Data1	FM: New frequency (MHz)
Data2	FM: New frequency (10's kHz)
Et	0x0D

Request the current DAB station selected. If DAB is not selected on the given zone, an error 0x85 is returned.

Command/response sequence to request the DAB station selection where the station is called "DAB STATION 2" in zone 1:

Command: 0x21 0x01 0x18 0x01 0xF0 0x0D

Command: 0x21 0x01 0x18 0x01 0xF0 0x0D

Response: 0x21 0x01 0x18 0x00 0x10 0x44 0x41 0x42 0x20 0x53 0x54 0x41
0x54 0x49 0x4F 0x4E 0x20 0x32 0x20 0x20 0x20 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x18
Dl	0x01
Data	0xF0 – Request the current DAB station
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x18
Ac	Answer code
Dl	Data length, fixed to 16 bytes (ASCII characters)
Data1 –	The service label of the DAB station in ASCII characters.
Data128	The data is padded to 16 bytes with the space character (0x20)
Et	0x0D

Request information on the current station programme type from DAB source in a given zone. If DAB is not selected on the given zone an error 0x85 is returned.

Command/response sequence to request the programme type on zone 1 where the programme type is "POP MUSIC":

Command: 0x21 0x01 0x19 0x01 0xF0 0x0D

Response: 0x21 0x01 0x19 0x00 0x10 0x50 0x4F 0x50 0x20 0x4D
0x55 0x53 0x49 0x43 0x20 0x20 0x20 0x20 0x20 0x20
0x20 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x19
Dl	0x01
Data1	Request information source: 0xF0 – DAB program type
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x19
Ac	Answer code
Dl	Data length, fixed to 16 bytes (ASCII characters)
Data1 – Data128	The radio programme type in ASCII characters. The data is padded to 16 bytes with the space character (0x20)
Et	0x0D

Request DLS/PDT information (digital radio text) from the current radio station in a given zone. If DAB is not selected on the given zone an error 0x85 is returned.

Command/response sequence to request the DLS information on DAB in zone 1, where the response is “Playing your favourite music”.

Command: 0x21 0x01 0x1A 0xF0 0x0D

[illegible]

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1A
Dl	0x01
Data1	Request information source: 0xF0 – DAB
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1A
Ac	Answer code
Dl	Data length, fixed to 128 bytes (ASCII characters)
Data1 – Data<n>	The radio programme type in ASCII characters. The data is padded to 128 bytes with the space character (0x20)
Et	0x0D

Request preset details (0x1B)

Request details of tuner presets.

Example

Command/response sequence to request preset 1 where the response is a preset on DAB called “DAB STATION 2”:

Command: 0x21 0x01 0x1B 0x01 0x01 0x0D
Response: 0x21 0x01 0x1B 0x00 0x0F 0x01 0x02 0x44 0x41 0x42
0x20 0x53 0x54 0x41 0x54 0x49 0x4F 0x4E 0x20 0x32
0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1B
Dl	0x01
Data	0x01 - 0x32: (1-50) The number of the required preset
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1B
Ac	Answer code
Dl	Data length <n>
Data1	0x01 - 0x32: (1-50) The number of the requested preset
Data2	0x01 : FM frequency 0x02 : FM RDS name 0x03 : DAB (AVR450/750 only)
Data3	FM: New frequency (MHz)
Data4	FM: New frequency (10'skHz)
Data<n>	The name (DAB, FM if RDS) in ASCII characters
Et	0x0D

Network playback status (0x1C)

Network message format.

If the network is not selected on the given zone an error 0x85 is returned.

Example

Command/response sequence where the network module is playing.

Command: 0x21 0x01 0x1C 0x01 0xF0 0x0D
Response: 0x21 0x01 0x1C 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1C
Dl	0x01
Data	0xF0 – Request Network playback status
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x1C
Ac	Answer code
Dl	Data length <n>
Data1	0x00 – Stopped 0x01 – Transitioning 0x02 – Playing 0x03 – Paused
Et	0x0D

IMAX Enhanced (0x0C)

Controls IMAX Enhanced.

Example

Command/response sequence to set IMAX Enhanced to Auto:

Command: 0x21 0x01 0x0C 0x01 0xF1 0x0D
Response: 0x21 0x01 0x0C 0x00 0x01 0x02 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0C
Dl	0x01
Data	0xF0 – Request current IMAX Enhanced state 0xF1 – IMAX Enhanced Auto 0xF2 – IMAX Enhanced On 0xF3 - IMAX Enhanced Off
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x0C
Ac	Answer code
Dl	0x01
Data1	0x00 – IMAX Enhanced Off 0x01 – IMAX Enhanced On 0x02 – IMAX Enhanced Auto
Et	0x0D

Setup Adjustment Command Specifications

Treble Equalisation (0x35)

Adjust the amount of treble equalisation.

Example

Command/response sequence to set the treble to -2dB:

Command: 0x21 0x01 0x35 0x01 0x82 0x0D

Response: 0x21 0x01 0x35 0x00 0x01 0x82 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x35
Dl	0x01
Data	0x00 — 0x0C – Set treble to 0dB — +12dB 0x81 — 0x8C – Set treble to -1dB — -12dB 0xF0 – Request current treble value 0xF1 – Increment treble by 1dB 0xF2 – Decrement treble by 1dB
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x35
Ac	Answer code
Dl	0x01
Data1	0x00 — 0x0C – Treble is 0dB — +12dB 0x81 — 0x8C – Treble is -1dB — -12dB
Et	0x0D

Bass Equalisation (0x36)

Adjust the amount of bass equalisation.

Example

Command/response sequence to increase the bass EQ by 1dB when it was 0dB:

Command: 0x21 0x01 0x36 0x01 0xF1 0x0D

Response: 0x21 0x01 0x36 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x36
Dl	0x01
Data	0x00 — 0x0C – Set bass to 0dB — +12dB 0x81 — 0x8C – Set bass to -1dB — -12dB 0xF0 – Request current bass value 0xF1 – Increment bass by 1dB 0xF2 – Decrement bass by 1dB
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x36
Ac	Answer code
Dl	0x01
Data1	0x00 — 0x0C – Bass is 0dB — +12dB 0x81 — 0x8C – Bass is -1dB — -12dB
Et	0x0D

Room Equalisation (0x37)

Turn the room equalisation system on/off.

Example

Command/response sequence to turn the room equalisation system on (EQ1):

Command: 0x21 0x01 0x37 0x01 0x01 0x0D

Response: 0x21 0x01 0x37 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x37
Dl	0x01
Data	0xF0 – Request current Room EQ state 0x01 – Room EQ 1 on 0x02 – Room EQ 2 on 0x03 – Room EQ 3 on 0x04 – Room EQ off
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x37
Ac	Answer code
Dl	0x01
Data1	0x00 – Room EQ is off 0x01 – Room EQ 1 is on 0x02 – Room EQ 2 is on 0x03 – Room EQ 3 is on 0x04 – Room EQ has not been calculated and is therefore off
Et	0x0D

Dolby Volume (0x38)

Control the status of the Dolby volume system.

Example

Command/response sequence to turn the Dolby Volume system on:

Command: 0x21 0x01 0x38 0x01 0x01 0x0D
Response: 0x21 0x01 0x38 0x00 0x01 0x02 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x38
Dl	0x01
Data	0x00 – Dolby Volume off 0x01 – Dolby Volume on 0xF0 – Request current Dolby Volume mode
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x38
Ac	Answer code
Dl	0x01
Data1	0x00 – Dolby Volume is off 0x01 – Dolby Volume is on
Et	0x0D

Dolby Leveller (0x39)

Control the status of the leveller component of the Dolby volume system.

Example

Command/response sequence to set the Dolby Leveller to 5:

Command: 0x21 0x01 0x39 0x01 0x05 0x0D
Response: 0x21 0x01 0x39 0x00 0x01 0x05 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x39
Dl	0x01
Data	0x00 — 0x0A – Set Dolby Leveller to 0 — 10 0xF0 – Request current Dolby Leveller setting 0xF1 – Increment Dolby Leveller setting 0xF2 – Decrement Dolby Leveller setting 0xFF – Turn off Dolby Leveller
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x39
Ac	Answer code
Dl	0x01
Data1	0x00 — 0x0A – Dolby Leveller setting is 0 — 10 0xFF – Dolby Leveller is off
Et	0x0D

Dolby Volume Calibration Offset (0x3A)

Adjust the calibration offset of the Dolby volume system.

Example

Command/response sequence to set the calibration offset to -5dB:

Command: 0x21 0x01 0x3A 0x01 0x85 0x0D
Response: 0x21 0x01 0x3A 0x00 0x01 0x85 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x3A
Dl	0x01
Data	0x00 — 0x0F – Set the calibration offset to 0 — 15dB 0x81 — 0x8F – Set the calibration offset to -1 — -15dB 0xF0 – Request current calibration offset 0xF1 – Increment the calibration offset by 1dB 0xF2 – Decrement the calibration offset by 1dB
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x3A
Ac	Answer code
Dl	0x01
Data1	0x00 — 0x0F – Calibration offset is 0 — 15dB 0x81 — 0x8F – Calibration offset is -1 — -15dB
Et	0x0D

Balance (0x3B)

Adjust the balance control.

Example

Command/response sequence to set the balance to -3:

Command: 0x21 0x01 0x3B 0x01 0x83 0x0D
Response: 0x21 0x01 0x3B 0x00 0x01 0x83 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x3B
Dl	0x01
Data	0x00 — 0x06 – Set the balance to 0 — 6 0x81 — 0x86 – Set the balance to -1 — -6 0xF0 – Request current balance 0xF1 – Increment the balance by 1dB 0xF2 – Decrement the balance by 1dB
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x3B
Ac	Answer code
Dl	0x01
Data1	0x00 — 0x06 – Balance is 0 — 6 0x81 — 0x86 – Balance is -1 — -6
Et	0x0D

Subwoofer Trim (0x3F)

Adjust the value of subwoofer trim.

Example

Command/response sequence to set the subwoofer trim to -1.5dB:

Command: 0x21 0x01 0x3F 0x01 0x85 0x0D
Response: 0x21 0x01 0x3F 0x00 0x01 0x85 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x3F
Dl	0x01
Data	0x00 — 0x14 – Set positive subwoofer trim in 0.5dB steps (e.g. 0x02 = +1.0dB) 0x81 — 0x94 – Set negative sub. trim in 0.5dB steps (e.g. 0x82 = -1.0dB) 0xF0 – Request current subwoofer trim value 0xF1 – Increment the subwoofer trim by 0.5dB 0xF2 – Decrement the subwoofer trim by 0.5dB
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x3F
Ac	Answer code
Dl	0x01
Data1	0x00 — 0x14 – Positive subwoofer trim in 0.5dB steps (e.g. 0x02 = +1.0dB) 0x81 — 0x94 – Negative subwoofer trim in 0.5dB steps (e.g. 0x82 = -1.0dB)
Et	0x0D

Lipsync Delay (0x40)

Adjust the lipsync delay value.

Example

Command/response sequence to set the lipsync delay to 50ms:

Command: 0x21 0x01 0x40 0x01 0x0A 0x0D
Response: 0x21 0x01 0x40 0x00 0x01 0x0A 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x40
Dl	0x01
Data	0x00 — 0x32 – set the lipsync delay in 5ms steps (e.g. 0x08 = 40ms) 0xF0 – Request current lipsync delay value 0xF1 – Increment the lipsync delay by 5ms 0xF2 – Decrement the lipsync delay by 5ms
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x40
Ac	Answer code
Dl	0x01
Data1	0x00 — 0x32 – the lipsync delay in 5ms steps (e.g. 0x10 = 80ms)
Et	0x0D

Compression (0x41)

Adjust the dynamic range compression setting.

Example

Command/response sequence to set compression to medium:

Command: 0x21 0x01 0x41 0x01 0x01 0x0D
Response: 0x21 0x01 0x41 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x41
Dl	0x01
Data	0x00 – Compression off 0x01 – Set compression to medium 0x02 – Set compression to high 0xF0 – Request current compression setting
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x41
Ac	Answer code
Dl	0x01
Data1	0x00 – Compression off 0x01 – medium 0x02 – high
Et	0x0D

Request incoming video parameters (0x42)

Request the incoming video resolution, refresh rate and aspect ratio.

Example

Command/response sequence to request video parameters, where the video is 1280x720 (720p) 50Hz 16:9, normal colourspace:

Command: 0x21 0x01 0x42 0x01 0xF0 0x0D
Response: 0x21 0x01 0x42 0x00 0x08 0x05 0x00 0x02 0xD0 0x32 0x00 0x02 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x42
Dl	0x01
Data	0xF0 – Request incoming video parameters
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x42
Ac	Answer code
Dl	0x08
Data1	Horizontal resolution MSB (e.g. for 720p: 0x05 since 1280 = 0x0500)
Data2	Horizontal resolution LSB (e.g. for 720p: 0x00 since 1280 = 0x0500)
Data3	Vertical resolution MSB (e.g. for 720p: 0x02 since 720 = 0x02D0)
Data4	Vertical resolution LSB (e.g. for 720p: 0xD0 since 720 = 0x02D0)
Data5	Refresh rate for full image update (half the field rate for interlaced signals) (e.g. for 50Hz progressive: 0x32)
Data6	Interlaced flag: 0x00 – Progressive 0x01 – Interlaced
Data7	Aspect ratio: 0x00 – Undefined 0x01 – 4:3 0x02 – 16:9
Data 8	Colour space 0x00 - normal 0x01 - HDR10 0x02 - Dolby Vision 0x03 - HLG 0x04 - HDR10+
Et	0x0D

Request incoming audio format (0x43)

Request the incoming audio format.

Example

Command/response sequence to request the incoming audio format, where the format is Dolby Digital 5.1:

Command: 0x21 0x01 0x43 0x01 0xF0 0x0D
Response: 0x21 0x01 0x43 0x00 0x02 0x02 0x1A 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x43
Dl	0x01
Data	0xF0 – Request incoming audio format
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x43
Ac	Answer code
Dl	0x02
Data1	Audio stream format: 0x00 – PCM 0x01 – Analogue Direct 0x02 – Dolby Digital 0x03 – Dolby Digital EX 0x04 – Dolby Digital Surround 0x05 – Dolby Digital Plus 0x06 – Dolby Digital True HD 0x07 – DTS 0x08 – DTS 96/24 0x09 – DTS ES Matrix 0x0A – DTS ES Discrete 0x0B – DTS ES Matrix 96/24 0x0C – DTS ES Discrete 96/24 0x0D – DTS HD Master Audio 0x0E – DTS HD High Res Audio 0x0F – DTS Low Bit Rate 0x10 – DTS Core 0x13 – PCM Zero 0x14 – Unsupported 0x15 – Undetected 0x16 - Dolby Atmos 0x17 - DTS:X 0x18 - IMAX ENHANCED 0x19 - Auro 3D
Data2	Audio channel configuration: 0x00 – Dual Mono 0x01 – Centre only 0x02 – Stereo only 0x03 – Stereo + mono surround 0x04 – Stereo + Surround L & R 0x05 – Stereo + Surround L & R + mono Surround Back 0x06 – Stereo + Surround L & R + Surround Back L & R 0x07 – Stereo + Surround L & R containing matrix information for surround back L&R 0x08 – Stereo + Centre 0x09 – Stereo + Centre + mono surround 0x0A – Stereo + Centre + Surround L & R 0x0B – Stereo + Centre + Surround L & R + mono Surround Back 0x0C – Stereo + Centre + Surround L & R + Surround Back L & R 0x0D – Stereo + Centre + Surround L & R containing matrix information for surround back L&R 0x0E – Stereo Downmix Lt Rt 0x0F – Stereo Only (Lo Ro) 0x10 – Dual Mono + LFE 0x11 – Centre + LFE 0x12 – Stereo + LFE 0x13 – Stereo + single surround + LFE 0x14 – Stereo + Surround L & R + LFE 0x15 – Stereo + Surround L & R + mono Surround Back + LFE 0x16 – Stereo + Surround L & R + Surround Back L & R + LFE 0x17 – Stereo + Surround L & R + LFE 0x18 – Stereo + Centre + LFE containing matrix information for surround back L&R 0x19 – Stereo + Centre + single surround + LFE 0x1A – Stereo + Centre + Surround L & R + LFE (Standard 5.1) 0x1B – Stereo + Centre + Surround L & R + LFE, containing matrix information for surround back L&R (6.1, e.g. DTS ES Discrete) 0x1C – Stereo + Centre + Surround L & R + Surround Back L & R + LFE (7.1) 0x1D – Stereo + Centre + Surround L & R + LFE, containing matrix information for surround back L&R (6.1 e.g. Dolby Digital EX) 0x1E – Stereo Downmix (Lt Rt) + LFE 0x1F – Stereo Only (Lo Ro) + LFE 0x20 – Unknown 0x21 – Undetected
Et	0x0D

Request incoming audio sample rate (0x44)

Request the incoming audio sample rate.

Example

Command/response sequence to request the incoming audio sample rate, where the rate is 48kHz:

Command: 0x21 0x01 0x44 0x01 0xF0 0x0D

Response: 0x21 0x01 0x44 0x00 0x01 0x02 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x44
Dl	0x01
Data	0xF0 – Request incoming audio sample rate
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x44
Ac	Answer code
Dl	0x01
Data1	Incoming audio sample rate: 0x00 – 32 KHz 0x01 – 44.1 KHz 0x02 – 48 KHz 0x03 – 88.2 KHz 0x04 – 96 KHz 0x05 – 176.4 KHz 0x06 – 192 KHz 0x07 – Unknown 0x08 – Undetected
Et	0x0D

Set/Request Sub Stereo Trim (0x45)

Set/Request the subwoofer trim value for stereo mode.

Example

Command/response sequence to set the sub stereo trim to -1.5dB:

Command: 0x21 0x01 0x45 0x01 0x83 0x0D

Response: 0x21 0x01 0x45 0x00 0x01 0x83 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x45
Dl	0x01
Data	0x00 – set the Sub Stereo Trim value to 0dB 0x81 — 0x94 – set the Sub Stereo Trim value to -0.5dB — -10.00dB 0xF0 – Request Sub Stereo Trim value 0xF1 – Increment Sub Stereo Trim value by 0.5dB 0xF2 – Decrement Sub Stereo Trim value by 0.5dB
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x45
Ac	Answer code
Dl	0x01
Data1	0x00, 0x81 — 0x94 – Sub Stereo Trim value in -0.5dB steps
Et	0x0D

Set/Request Zone 1 OSD on/off (0x4E)

Set/Request whether the Zone 1 OSD is shown.

Example

Command/response sequence to set the Zone 1 OSD to 'Off':

Command: 0x21 0x01 0x4A 0x01 0xF2 0x0D

Response: 0x21 0x01 0x4A 0x00 0x00 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x4E
Dl	0x01
Data	0xF0 – Request current Zone 1 OSD on/off state. 0xF1 – Set Zone 1 OSD to On. 0xF2 – Set Zone 1 OSD to Off.
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x4E
Ac	Answer code
Dl	0x01
Data1	0x00 – Zone 1 OSD is On. 0x01 – Zone 1 OSD is Off.
Et	0x0D

Set/Request Video Output Switching (0x4F)

Set/Request the HDMI video output selection.

Example

Command/response sequence to set the video output to HDMI output 1:

Command: 0x21 0x01 0x4F 0x01 0x02 0x0D

Response: 0x21 0x01 0x4F 0x00 0x01 0x02 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x4F
Dl	0x01
Data	0x02 – Set HDMI Output 1. 0x03 – Set HDMI Output 2. 0x04 – Set HDMI Output 1 & 2. 0xF0 – Request current video output switching setting.
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x4F
Ac	Answer code
Dl	0x01
Data1	0x02 – HDMI Output 1. 0x03 – HDMI Output 2. 0x04 – HDMI Output 1 & 2.
Et	0x0D

Set/request input name (0x20)

This command returns the name of an input if renamed by the user. It can also be used to set the input name.

Example

Command/response sequence for setting the current input to "BDP300":

Command: 0x21 0x01 0x20 0x06 0x42 0x44 0x50 0x33 0x30 0x30 0x0D

Response: 0x20 0x01 0x20 0x00 0x06 0x42 0x44 0x50 0x33 0x30 0x30 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x20
Dl	0x01 (query) or <n> (limited to 10 characters) for setting name
Data	F0 - query 1-<n>
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x20
Ac	Answer code
Dl	Data length - <n> if setting, 0x0A if requesting the name
Data1 - Data <n>	Input name in ASCII characters
Et	0x0D

FM Scan up/down (0x23)

Initiates a FM scan up or down. Note: only valid if on FM input

Example

Command/response to starting a FM scan up:

Command: 0x21 0x01 0x23 0x01 0x01 0x0D
Response: 0x21 0x01 0x23 0x00 0x01 0xFF 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x23
Dl	0x01
Data	0x01 - Scan up 0x02 - Scan down
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x23
Ac	Answer code
Dl	0x01
Data1	0xFF - scanning
Et	0x0D

DAB Scan (0x24)

Initiates a DAB scan. Note: only valid if on DAB input

Example

Command/response to starting a DAB scan:

Command: 0x21 0x01 0x24 0x01 0xF0 0x0D
Response: 0x21 0x01 0x24 0x00 0x01 0xFF 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x24
Dl	0x01
Data	0xF0 - Start DAB scan
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x24
Ac	Answer code
Dl	0x01
Data1	0xFF - scanning
Et	0x0D

Heartbeat (0x25)

Heartbeat command to check unit is still connected and communication - also resets the EuP standby timer.

Example

Command/response to sending a heartbeat command:

Command: 0x21 0x01 0x25 0x01 0xF0 0x0D
Response: 0x21 0x01 0x25 0x00 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x25
Dl	0x01
Data	0xF0 - Heartbeat
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x25
Ac	Answer code
Dl	0x01
Data1	0x00 - response
Et	0x0D

Reboot (0x26)

Forces a reboot of the unit.

Example

Command/response to sending a reboot command:

Command: 0x21 0x01 0x26 0x06 0x52 0x45 0x42 0x4F 0x4F 0x54 0x0D
Response: 0x21 0x01 0x26 0x01 0x00 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x26
Dl	0x06
Data1	0x52
Data2	0x45
Data3	0x42
Data4	0x4F
Data5	0x4F
Data6	0x54
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x26
Ac	Answer code
Dl	0x01
Data1	0x00 - response
Et	0x0D

Bluetooth status (0x50)

Bluetooth status. Note: only valid if on BT input

Example

Command/response to starting a BT status request, where the response is paired, audio paused:

Command: 0x21 0x01 0x50 0x01 0xF0 0x0D
Response: 0x21 0x01 0x50 0x00 0x01 0x01 0x0D

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x50
Dl	0x01
Data	0xF0 - BT status request
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x50
Ac	Answer code
Dl	Dat a length <n>
Data1	0x00 - No connection 0x01 - Connected, audio paused 0x02 - Connected, audio playing SBC 0x03 - Connected, audio playing AAC 0x04 - Connected, audio playing aptX 0x05 - Connected, audio playing aptX-HD
Data2 ~ Data<n>	name of track in ASCII if playing or paused
Et	0x0D

Setup (0x27)

Starts remote setup of the unit.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x27
Dl	0x01
Data1	0xF0
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x27
Ac	Answer code
Dl	0x01
Data1	0xnn - setup mode active, nn = version of menu 0xFF - setup mode from front panel, remote setup not possible
Et	0x0D

Room EQ name(s) (0x34)

Request Room EQ name(s).

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x34
Dl	0x01
Data1	0xF0 - request EQ names
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x34
Ac	Answer code
Dl	0xn - dependant on number of EQ slots filled, 20, 40, 60
Data1-20	EQ1 name (read only / 20 characters) name in ASCII characters
Data21-40	EQ2 name (read only / 20 characters) name in ASCII characters
Data41-60	EQ3 name (read only / 20 characters) name in ASCII characters
Et	0x0D

Now Playing Information (0x64)

Request the various now playing track details

Example

Command/response sequence to request the currently playing artist where the response is A

Command: 0x21 0x01 0x64 0x01 0xF1 0x0D

Response: 0x21 0x01 0x64 0x00 0x02 0x41 0x0D

Note

Response length is limited to 100 characters

COMMAND:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x64
DI	0x01
Data	0xF0 – Request the currently playing track title 0xF1 - Request the currently playing artist 0xF2 - Request the currently playing album 0xF3 - Request the currently playing application (GoogleCast only) 0xF4 - Request the currently playing sample rate 0xF5 - Request the currently playing track encoder
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone number
Cc	0x64
Ac	Answer code
DI	<n>
Data	Track: Track title in ASCII characters Album: Album name in ASCII characters Artist: Artist name in ASCII characters Application: GoogleCast source application in ASCII characters Sample rate: 0x00 – 32 kHz 0x01 – 44.1 kHz 0x02 – 48 kHz 0x03 – 88.2 kHz 0x04 – 96 kHz 0x05 – 176.4 kHz 0x06 – 192 kHz 0x07 – Unknown 0x08 – Undetected Audio encoder: 0x00 – MP3 0x01 – WAV 0x02 – WMA 0x03 – FLAC 0x04 - ALAC 0x05 – MQA 0x0A – Unknown
Et	0x0D

Input config (0x28)

Sends input config menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x28
Dl	0x01 / 0x1B
Data1	0xF0 - request Input config
Data 1-21	set input config as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x28
Ac	Answer code
Dl	0x1B
Data1-10	Input name 0xnn - Input name in ASCII characters
Data11	Lip Sync 0x00 - 0x32 Lip sync in 5mS steps
Data12	Mode 0x00 - Last mode 0x01 - Stereo 0x02 - Stereo Direct 0x03 - Dolby Surround 0x04 - DTS Neural:X 0x05 - Virtual Height 0x06 - 7 Ch Stereo Mode 0x07 - Auro-Matic 0x08 - Reserved
Data13	MCH mode 0x00 - Last mode 0x01 - Native 0x02 - Stereo Downmix 0x03 - Virtual Height 0x04 - Native Upmixer (Dolby Surround, DTS Virtual:X) 0x05 - Reserved
Data14	Bass 0x00 - 0x0C - Bass is 0dB — +12dB 0x81 - 0x8C - Bass is -1dB — -12dB
Data15	Treble 0x00 - 0x0C - Treble is 0dB — +12dB 0x81 - 0x8C - Treble is -1dB — -12dB
Data16	Room EQ 0x00 - Room EQ off 0x01 - Room EQ1, 0x02 - Room EQ2, 0x03 - Room EQ3 0x04 - Not calculated
Data17	Input Trim 0x00 - 1V 0x01 - 2V 0x02 - 4V
Data18	Dolby Volume 0x00 - Dolby Volume off 0x01 - Dolby Volume on
Data19	Dolby Leveller 0x00 — 0x0A - Dolby Leveller setting is 0 — 10 0xFF - Dolby Leveller is off
Data20	Dolby Calibration Offset 0x00 — 0x0F - Calibration offset is 0 — 15dB 0x81 — 0x8F - Calibration offset is -1 — -15dB
Data21	Stereo mode 0x00 - Left/Right 0x01 - Left/Right+Sub 0x02 - Sub+Sat 0x03 - As speaker types
Data22	Sub Stereo 0x00 - 0dB 0x81 — 0x94 - Sub Stereo is -0.5 — -10dB
Data23	IMAX Enhanced mode 0x00 - Auto 0x01 - On 0x02 - Off
Data24	Auro-Matic 3D 0x00 - Small, 0x01 - Medium, 0x02 - Large, 0x03 - Movie, 0x04 - Speech
Data25	Auro-Matic Strength 0x00 - 0x10 - 0-16
Data26	Audio Source 0x00 - Analogue audio is in use for the current source. 0x01 - Digital audio is in use for the current source. 0x02 - HDMI audio is in use for the current source.
Data27	CD Direct 0x00 - CD Direct off, 0x01 - CD Direct on
Et	0x0D

General Setup (0x29)

Sends general setup menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x29
Dl	0x01 / 0x21
Data1	0xF0 - request Input config
Data 1-32	set input config as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x29
Ac	Answer code
Dl	0x21
Data1-10	0xnn - Input name in ASCII characters
Data11	Audio stream format: 0x00 – PCM 0x01 – Analogue Direct 0x02 – Dolby Digital 0x03 – Dolby Digital EX 0x04 – Dolby Digital Surround 0x05 – Dolby Digital Plus 0x06 – Dolby Digital True HD 0x07 – DTS 0x08 – DTS 96/24 0x09 – DTS ES Matrix 0x0A – DTS ES Discrete 0x0B – DTS ES Matrix 96/24 0x0C – DTS ES Discrete 96/24 0x0D – DTS HD Master Audio 0x0E – DTS HD High Res Audio 0x0F – DTS Low Bit Rate 0x10 – DTS Core 0x13 – PCM Zero 0x14 – Unsupported 0x15 – Undetected 0x16 - Dolby Atmos 0x17 - DTS:X 0x18 - IMAX ENHANCED 0x19 - Auro 3D
Data12	Audio channel configuration: 0x00 – Dual Mono 0x01 – Centre only 0x02 – Stereo only 0x03 – Stereo + mono surround 0x04 – Stereo + Surround L & R 0x05 – Stereo + Surround L & R + mono Surround Back 0x06 – Stereo + Surround L & R + Surround Back L & R 0x07 – Stereo + Surround L & R containing matrix information for surround back L&R 0x08 – Stereo + Centre 0x09 – Stereo + Centre + mono surround 0x0A – Stereo + Centre + Surround L & R 0x0B – Stereo + Centre + Surround L & R + mono Surround Back 0x0C – Stereo + Centre + Surround L & R + Surround Back L & R 0x0D – Stereo + Centre + Surround L & R containing matrix information for surround back L&R 0x0E – Stereo Downmix Lt Rt 0x0F – Stereo Only (Lo Ro) 0x10 – Dual Mono + LFE 0x11 – Centre + LFE 0x12 – Stereo + LFE 0x13 – Stereo + single surround + LFE 0x14 – Stereo + Surround L & R + LFE 0x15 – Stereo + Surround L & R + mono Surround Back + LFE 0x16 – Stereo + Surround L & R + Surround Back L & R + LFE 0x17 – Stereo + Surround L & R + LFE 0x18 – Stereo + Centre + LFE containing matrix information for surround back L&R 0x19 – Stereo + Centre + single surround + LFE 0x1A – Stereo + Centre + Surround L & R + LFE (Standard 5.1) 0x1B – Stereo + Centre + Surround L & R + mono Surround Back + LFE (6.1, e.g. DTS ES Discrete) 0x1C – Stereo + Centre + Surround L & R + Surround Back L & R + LFE (7.1) 0x1D – Stereo + Centre + Surround L & R + LFE, containing matrix information for surround back L&R (6.1 e.g. Dolby Digital EX) 0x1E – Stereo Downmix (Lt Rt) + LFE 0x1F – Stereo Only (Lo Ro) + LFE 0x20 – Unknown 0x21 – Undetected

Data13	Incoming audio sample rate: 0x00 – 32 KHz 0x01 – 44.1 KHz 0x02 – 48 KHz 0x03 – 88.2 KHz 0x04 – 96 KHz 0x05 – 176.4 KHz 0x06 – 192 KHz 0x07 – Unknown 0x08 – Undetected
Data14	Incoming bitrate 0x00 - 32kbps 0x01 - 56kbps 0x02 - 64kbps 0x03 - 96kbps 0x04 - 112kbps 0x05 - 128kbps 0x06 - 192kbps 0x07 - 224kbps 0x08 - 256kbps 0x09 - 320kbps 0x0A - 384kbps 0x0B - 448kbps 0x0C - 512kbps 0x0D - 576kbps 0x0E - 640kbps 0x0F - 768kbps 0x10 - 960kbps 0x11 - 1024kbps 0x12 - 1152kbps 0x13 - 1280kbps 0x14 - 1344kbps 0x15 - 1408kbps 0x16 - 1411.2kbps 0x17 - 1472kbps 0x18 - 1536kbps 0x19 - 1920kbps 0x1A - 2048kbps 0x1B - 3072kbps 0x1C - 3840kbps 0x1D - Open 0x1E - Variable 0x1F - Lossless
Data15	Dialnorm 0x00 (0dB) - 0x1F (31dB)
Data16-20	Incoming video resolution (returns 0x00 x 5 if no input) Horizontal resolution MSB (e.g. for 720p: 0x05 since 1280 = 0x0500) Horizontal resolution LSB (e.g. for 720p: 0x00 since 1280 = 0x0500) Vertical resolution MSB (e.g. for 720p: 0x02 since 720 = 0x02D0) Vertical resolution LSB (e.g. for 720p: 0xD0 since 720 = 0x02D0) Refresh rate for full image update (half the field rate for interlaced signals) (e.g. for 50Hz progressive: 0x32)

Data21	Interlaced flag: 0x00 – Progressive 0x01 – Interlaced
Data22	Aspect ratio: 0x00 – Undefined 0x01 – 4:3 0x02 – 16:9
Data23	Colour space 0x00 - normal 0x01 - HDR10 0x02 - Dolby Vision 0x03 - HLG 0x04 - HDR10+
Data24	Audio compression 0x00 - Off 0x01 - Medium 0x02 - High
Data25	Balance 0x00 — 0x06 – Balance is 0 — 6 0x81 — 0x86 – Balance is -1 — -6
Data26	Dolby centre spread 0x00 - Enable 0x01 - Disable
Data27	DTS Dialogue Control 0x00 — 0x06 – DTS Dialog Control is 0 — 6
Data28	Maximum volume 0x00 (0) – 0x63 (99)
Data29	Maximum on volume 0x00 (0) – 0x63 (99) – Set the volume
Data30	Display on time 0x00 - 5 seconds 0x01 - 10 seconds 0x02 - 30 seconds 0x03 - 1 minute 0x04 - Always on
Data31	Control option 0x00 - Off 0x01 - RS232 0x02 - IP
Data32	Power on option 0x00 - Last state 0x01 - Standby 0x02 - On
Data33	Language 0x00 - English 0x01 - Francis 0x02 - Deutsch 0x03 - Espanol 0x04 - Nederlands 0x05 - Русский 0x06 - 中文

Speaker Types (0x2A)

Set / request speaker type menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x2A
Dl	0x01 / 0x0D
Data1	0xF0 - request Speaker Types
Data 1-10	set Speaker Types as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x2A
Ac	Answer code
Dl	0x0D
Data1-6	Speaker type
1=L/R	0x00 - Large
2=Centre	0x01 - Small, 40Hz
3=Surr.	0x02 - Small, 50Hz
4=Back	0x03 - Small, 60Hz
5=Height1	0x04 - Small, 70Hz
6=Height2	0x05 - Small, 80Hz
	0x06 - Small, 90Hz
	0x07 - Small, 100Hz
	0x08 - Small, 110Hz
	0x09 - Small, 120Hz
	0x0A - Small, 150Hz
	0x0B - Small, 160Hz
	0x0C - Small, 170Hz
	0x0D - Small, 180Hz
	0x0E - Small, 180Hz
	0x0F - Small, 200Hz
	0x10 - None
Data7	Subwoofer
	0x00 - Subwoofer
	0x01 - None
	Channel 13 & 14
Data8	0x00 - Front wides, large
	0x01 - Front wide, small, 40Hz
	0x02 - Front wide, small, 50Hz
	0x03 - Front wide, small, 60Hz
	0x04 - Front wide, small, 70Hz
	0x05 - Front wide, small, 80Hz
	0x06 - Front wide, small, 90Hz
	0x07 - Front wide, small, 100Hz
	0x08 - Front wide, small, 110Hz
	0x09 - Front wide, small, 120Hz
	0x0A - Front wide, small, 150Hz
	0x0B - Front wide, small, 160Hz
	0x0C - Front wide, small, 170Hz
	0x0D - Front wide, small, 180Hz
	0x0E - Front wide, small, 190Hz
	0x0F - Front wide, small, 200Hz
	0x10 - Front subs
	0x11 - None
	Channel 15 & 16
Data9	0x00 - Middle heights, large, 0x10 - CH & TS large
	0x01 - Middle heights, small, 40Hz, 0x10 - CH & TS, small, 40Hz
	0x02 - Middle heights, small, 50Hz, 0x12 - CH & TS, small, 50Hz
	0x03 - Middle heights, small, 60Hz, 0x13 - CH & TS, small, 60Hz
	0x04 - Middle heights, small, 70Hz, 0x14 - CH & TS, small, 70Hz
	0x05 - Middle heights, small, 80Hz, 0x15 - CH & TS, small, 80Hz
	0x06 - Middle heights, small, 90Hz, 0x16 - CH & TS, small, 90Hz
	0x07 - Middle heights, small, 100Hz, 0x17 - CH & TS, small, 100Hz
	0x08 - Middle heights, small, 110Hz, 0x18 - CH & TS, small, 110Hz
	0x09 - Middle heights, small, 120Hz, 0x19 - CH & TS, small, 120Hz
	0x0A - Middle heights, small, 150Hz, 0x1A - CH & TS, small, 150Hz
	0x0B - Middle heights, small, 160Hz, 0x1B - CH & TS, small, 160Hz
	0x0C - Middle heights, small, 170Hz, 0x1C - CH & TS, small, 170Hz
	0x0D - Middle heights, small, 180Hz, 0x1D - CH & TS, small, 180Hz
	0x0E - Middle heights, small, 190Hz, 0x1E - CH & TS, small, 190Hz
	0x0F - Middle heights, small, 200Hz, 0x1F - CH & TS, small, 200Hz
	0x20 - Rear subs
	0x21 - None
	Height type
Data10	0x00 - Top
	0x01 - Dolby Enabled
	Use channel 6&7
Data11	0x00 - Surround back
	0x01 - Bi-Amp L+R
	0x02 - Zone2, 0x03 - Height1

Data12	Filter slope 0x00 - 12dB 0x01 - 24dB 0x02 - 36dB 0x03 - 48dB
Data13	Sub gain 0x00 - 0dB 0x01 - -6dB 0x02 - -12dB 0x03 - -18dB 0x04 - -24dB 0x05 - -30dB
Et	0x0D

Speaker Distances (0x2B)

Set / request speaker distance menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x2B
Dl	0x01 / 0x21
Data1	0xF0 - request Speaker Distance
Data 1-33	set Speaker Distance as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x2B
Ac	Answer code
Dl	0x21
Data1	Units 0x00 - metres 0x01 - feet
Data2-33	Distance in 2 bytes per speaker (m:cm / ft:in) Front Left Centre Front Right Surr. Right Surr. Back Right Surr. Back Left Surr. Left Left Top Front Right Top Front Left Top Back Right Top Back Subwoofer Channel13 Channel14 Channel15 Channel 16
Et	0x0D

Speaker Levels (0x2C)

Set / request speaker level menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x2C
Dl	0x01 / 0x12
Data1	0xF0 - request Speaker Levels
Data 1-16	set Speaker Levels as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x2C
Ac	Answer code
Dl	0x12
Data1	Test tone 0x00 - Internal 0x01 - External
Data2-17	Speaker level 0x00 — 0x14 -0dB — +10dB 0x81 — 0x94 -0.5dB — -10dB Front Left, Centre Front Right Surr. Right Surr. Back Right Surr. Back Left Surr. Left Left Top Front Right Top Front Left Top Back Right Top Back Subwoofer Channel13 Channel14 Channel15 Channel 16 Noise output
Data18	0x00 - None (switch off audio noise output) 0x01 - Front Left 0x02 - Centre 0x03 - Front Right 0x04 - Surr. Right 0x05 - Surr. Back Right 0x06 - Surr. Back Left 0x07 - Surr. Left 0x08 - Left Top Front 0x09 - Right Top Front 0x0A - Left Top Back 0x0B - Right Top Back 0x0C - Subwoofer 0x0D - Channel 13 0x0E - Channel 14 0x0F - Channel 15 0x10 - Channel 16
Et	0x0D

Video Inputs (0x2D)

Set / request speaker level menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x2D
Dl	0x01 / 0x06
Data1	0xF0 - request Video Inputs config
Data 1-16	set Video Inputs as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x2D
Ac	Answer code
Dl	0x06
Data1-6	Video input in order for: Data1-CD, Data2-Aux, Data3-FM, Data4-DAB, Data5-NET, Data6-BT 0x00 - STB 0x01 - GAME 0x02 - AV 0x03 - SAT 0x04 - BD 0x05 - VCR 0x06 - PVR 0x07 - None
Et	0x0D

HDMI settings (0x2E)

Set / request HDMI settings menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x2
Dl	0x01 / 0x0A
Data1	0xF0 - request HDMI config
Data 1-09	set HDMI config as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x2E
Ac	Answer code
Dl	0x0A
Data1	Zone 1 OSD 0x00 - Off 0x01 - On
Data2	Zone 1 Out 0x00 - Out 1 & 2 0x01 - Out 1 0x02 - Out 2
Data3	Zone 1 lip sync (information only) 0x00 - 0xFA lipsync in 1mS steps
Data4	HDMI Audio to TV 0x00 - Off 0x01 - On
Data5	HDMI Bypass & IP 0x00 - Off 0x01 - HDMI & IP On
Data6	HDMI Bypass source 0x00 - Last 0x01 - STB 0x02 - Game 0x03 - AV 0x04 - SAT 0x05 - BD 0x06 - VCR 0x07 - PVR
Data7	CEC Control 0x00 - Off 0x01 - Output1
Data8	ARC Control 0x00 - Off 0x01 - Auto
Data9	TV Audio 0x00 - Off 0x01 - Auto
Data10	Power Off Control 0x00 - Off 0x01 - Auto
Et	0x0D

Zone settings (0x2F)

Set / request Zone settings menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x2F
Dl	0x01 / 0x06
Data1	0xF0 - request Zone settings
Data 1-10	set Zone settings as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x2F
Ac	Answer code
Dl	0x06
Data1	Zone 2 Input 0x00 - Follow Zone1 0x01 - CD 0x02 - BD 0x03 - AV 0x04 - SAT 0x05 - PVR 0x06 - VCR 0x07 - STB 0x08 - Game 0x09 - FM 0x0A - DAB 0x0B - NET 0x0C - BT 0x0D - Aux 0x0E - Display
Data2	Zone 2 Status 0x00 - Standby 0x01 - On
Data3	Zone 2 Volume 0x14 (20) – 0x53 (83)
Data4	Zone 2 Max. Volume 0x14 (20) – 0x53 (83)
Data5	Zone 2 fixed volume 0x00 - No 0x01 - Yes
Data6	Zone 2 Maximum On Volume 0x14 (20) – 0x53 (83)
Et	0x0D

Network (0x30)

Set / request Network menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x30
Dl	0x01 / 0x45
Data1	0xF0 - request Network settings
Data 1-69	set Network settings as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x30
Ac	Answer code
Dl	0x45
Data1	Net source 0x00 - Follow Zone1 0x01 - Follow Zone2
Data2-21	SSID name (20 character limit)
Data22-41	Network key (20 character limit - set only)
Data42-45	IP address 0x00-0xFF
Data46-49	MAC address 0x00 -0xFF
Data50-69	Friendly name (20 characters) name in ASCII characters
Et	0x0D

Bluetooth (0x32)

Set / request Bluetooth menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x32
Dl	0x01 / 0x02 / 0xnn
Data1	0xF0 - request Bluetooth settings
Data 1-2	set Bluetooth settings as below (only pair & clear can be set)
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x32
Ac	Answer code
Dl	0xn - dependant on number of paired devices
Data1	Pair Device (set only) 0x00 - no effect 0x01 - Start Pair Device
Data2	Clear Paired Devices (set only) 0x00 - no effect 0x01 - Clear Paired Devices
Data3-22	Paired device1 name (read only / 20 characters) name in ASCII characters
Data23-42	Paired device2 name (read only / 20 characters) name in ASCII characters
Data43-<n>	Paired device3-8 name (read only / 20 characters) name in ASCII characters
Et	0x0D

Engineering menu (0x33)

Set / request Engineering menu info.

COMMAND:	
Byte:	Description:
St	0x21
Zn	0x01
Cc	0x33
Dl	0x01 / 0x30
Data1	0xF0 - request Engineering menu settings
Data 1-	set Engineering menu settings as below
Et	0x0D
RESPONSE:	
Byte:	Description:
St	0x21
Zn	Zone Number
Cc	0x33
Ac	Answer code
Dl	0x2B
Data1	Reset Factory Defaults (set only) 0x00 - no effect 0x01 - Reset factory defaults
Data2	Check for update (set only) 0x00 - no effect 0x01 - Check for Update
Data3	Restore Secure backup 0x00 - no effect 0x01 - Restore secure backup
Data4	Store Secure Backup 0x00 - no effect 0x01 - Store secure backup
Data5	Restore USB backup 0x00 - no effect 0x01 - Restore USB backup
Data6	Store USB Backup 0x00 - no effect 0x01 - Store USB
Data7-10	Pin in hex 1-4
Data11	Region 0x00 - Europe 0x01 - US 0x02 - Canada 0x03 - Australia 0x04 - China
Data12	Remote Code 0x00 - 16 0x01 - 19
Data13	Standby Mode 0x00 - Auto 0x01 - Manual
Data14	Protection sensitivity 0x00 - High (default) 0x01 - Medium 0x02 - Low
Data15	Use Display HDMI 0x00 - Yes 0x01 - No
Data16	Display type 0x00 - 16:9 0x01 - 21:9
Data17	Shut down code (info only) 0x00 - 00 (normal) 0x01 - 01 (amp DC offset) 0x02 - 02 (amp overtemp) 0x03 - 03 (amp overcurrent)
Data18-26	Host/IAP version (info only) Version in ASCII e.g. "2.01/0.03"
Data27-30	DSP version (info only) Version in ASCII e.g. "1.03"
Data31-34	OSD version (info only) Version in ASCII e.g. "0.11"
Data35-48	NET version (info only) Version in ASCII e.g. "2.5.13.50017-6"
Et	0x0D

AV RC5 command codes

These codes are recognised as infra-red signals received by the front panel, RC5 electrical signals received by the remote in jacks and as control data using the 'Simulate RC5 IR Command' (0x 08).

Basic Functions

These RC5 codes are present on the supplied IR remote control and provide control over basic amplifier and video processing functions.

Function	RC5 code [system- command]	RC5 code (Data1 - Data2)
	Decimal	Hexadecimal
Standby	16-12	0x10 - 0x0C
Eject (Speaker trim)	16-45	0x10 - 0x2D
1	16-1	0x10 - 0x01
2	16-2	0x10 - 0x02
3	16-3	0x10 - 0x03
4	16-4	0x10 - 0x04
5	16-5	0x10 - 0x05
6	16-6	0x10 - 0x06
7	16-7	0x10 - 0x07
8	16-8	0x10 - 0x08
9	16-9	0x10 - 0x09
SYNC - Access Lipsync Delay control	16-50	0x10 - 0x32
0	16-0	0x10 - 0x00
INFO - Cycle between VFD information panels	16-55	0x10 - 0x37
Rewind	16-121	0x10 - 0x79
Fast Forward	16-52	0x10 - 0x34
Skip Back	16-33	0x10 - 0x21
Skip Forward	16-11	0x10 - 0x0B
Stop	16-54	0x10 - 0x36
Play	16-53	0x10 - 0x35
Pause	16-48	0x10 - 0x30
Disc (Record) (DTS dialogue control)	16-90	0x10 - 0x5A
MENU (Enter system menu)	16-82	0x10 - 0x52
Navigate Up	16-86	0x10 - 0x56
Pop Up (Dolby Volume on/off)	16-70	0x10 - 0x46
Navigate Left	16-81	0x10 - 0x51
OK	16-87	0x10 - 0x57
Navigate Right	16-80	0x10 - 0x50
Audio (Room EQ on/off)	16-30	0x10 - 0x1E
Navigate Down	16-85	0x10 - 0x55
RTN (Access Subwoofer Trim control)	16-51	0x10 - 0x33
HOME	16-43	0x10 - 0x2B
Mute	16-13	0x10 - 0x0D
Increase volume (+)	16-16	0x10 - 0x10
MODE (Cycle between decoding modes)	16-32	0x10 - 0x20
DISP (Change VFD brightness)	16-59	0x10 - 0x3B
Activate DIRECT mode	16-10	0x10 - 0x0A
Decrease volume (-)	16-17	0x10 - 0x11
Red	16-41	0x10 - 0x29
Green	16-42	0x10 - 0x2A
Yellow	16-43	0x10 - 0x2B
Blue	16-55	0x10 - 0x37
Radio	16-91	0x10 - 0x5B
Aux	16-99	0x10 - 0x63
Net	16-92	0x10 - 0x5C
AV	16-94	0x10 - 0x5E
Sat	16-27	0x10 - 0x1B
PVR	16-96	0x10 - 0x60
Game	16-97	0x10 - 0x61

Function	RC5 Code [system-command]	RC5 Code (Data1 - Data2)
	Decimal	Hexadecimal
BD	16-98	0x10 - 0x62
CD	16-118	0x10 - 0x76
STB	16-100	0x10 - 0x64
UHD	16-125	0x10 - 0x7D
BT	16-122	0x10 - 0x7A
Display	16-58	0x10 - 0x3A
Power On	16-123	0x10 - 0x7B
Power Off	16-124	0x10 - 0x7C

Advanced Functions

These RC5 codes are not present on the supplied remote control but have been created for custom install use. In order for the AVR to respond to these codes they must be transmitted from a programmable IR remote control or over the control link using the 'Simulate RC5 IR Command' (0x08).

Function	RC5 Code [system-command]	RC5 Code (Data1 - Data2)
	Decimal	Hexadecimal
Change control to next zone	16-95	0x10 - 0x5F
Access Bass control	16-39	0x10 - 0x27
Access Speaker Trim controls	16-37	0x10 - 0x25
Access Treble control	16-14	0x10 - 0x0E
Random	16-76	0x10 - 0x4C
Repeat	16-49	0x10 - 0x31
Direct mode On	16-78	0x10 - 0x4E
Direct mode Off	16-79	0x10 - 0x4F
Multi Channel	16-106	0x10 - 0x6A
Stereo	16-107	0x10 - 0x6B
Dolby Surround	16-110	0x10 - 0x6E
DTS Neo:6 Cinema	16-111	0x10 - 0x6F
DTS Neo:6 Music	16-112	0x10 - 0x70
DTS Neural:X	16-113	0x10 - 0x71
Reserved	16-114	0x10 - 0x72
Virtual Height	16-115	0x10 - 0x73
5/7 Ch Stereo	16-69	0x10 - 0x45
Dolby D EX	16-23	0x10 - 0x17
Auro Matic	16-71	0x10 - 0x47
Mute On	16-26	0x10 - 0x1A
Mute Off	16-120	0x10 - 0x78
FM	16-28	0x10 - 0x1C
DAB	16-72	0x10 - 0x48
Lip Sync +5ms	16-15	0x10 - 0x0F
Lip sync -5ms	16-101	0x10 - 0x65
Sub trim +0.5dB	16-105	0x10 - 0x69
Sub trim -0.5dB	16-108	0x10 - 0x6C
Display Off	16-31	0x10 - 0x1F
Display L1	16-34	0x10 - 0x22
Display L2	16-35	0x10 - 0x23
Balance left	16-38	0x10 - 0x26
Balance right	16-40	0x10 - 0x28
Bass +1	16-44	0x10 - 0x2C
Bass -1	16-47	0x10 - 0x2F
Treble +1	16-46	0x10 - 0x2E
Treble -1	16-102	0x10 - 0x66
Set Zone 2 to Follow Zone 1	16-20	0x10 - 0x14
Zone 2 Power On	23-123	0X17 - 0x7B

Function	RC5 Code [system-command]	RC5 Code (Data1 - Data2)
	Decimal	Hexadecimal
Zone 2 Power Off	23-124	0x17 - 0x7C
Zone 2 Vol+	23-1	0x17 - 0x01
Zone 2 Vol-	23-2	0x17 - 0x02
Zone 2 Mute	23-3	0x17 - 0x03
Zone 2 Mute On	23-4	0x17 - 0x04
Zone 2 Mute Off	23-5	0x17 - 0x05
Zone 2 CD	23-6	0x17 - 0x06
Zone 2 BD	23-7	0x17 - 0x07
Zone 2 STB	23-8	0x17 - 0x08
Zone 2 AV	23-9	0x17 - 0x09
Zone 2 Game	23-11	0x17 - 0x0B
Zone 2 Aux	23-13	0x17 - 0x0D
Zone 2 PVR	23-15	0x17 - 0x0F
Zone 2 FM	23-14	0x17 - 0x0E
Zone 2 DAB	23-16	0x17 - 0x10
Zone 2 USB	23-18	0x17 - 0x12
Zone 2 NET	23-19	0x17 - 0x13
Zone 2 SAT	23-20	0x17 - 0x14
Zone 2 UHD	23-23	0x17 - 0x17
Zone 2 BT	23-22	0x17 - 0x16
Select HDMI Out 1	16-73	0x10 - 0x49
Select HDMI Out 2	16-74	0x10 - 0x4A
Select HDMI Out 1 & 2	16-75	0x10 - 0x4B

ARCAM

AVR30

Class G AV Receiver

ARCAM



Features

- Dolby Atmos & DTS:X 9.1.6 decoding
- 4K (UHD) HDMI2.0b with HDCP2.2
- 7 HDMI inputs, 3 HDMI outputs, eARC compatible
- Dirac Live® for Arcam room correction
- ESS 9026PRO audiophile DAC
- Class G power amplification -
Uses toroidal transformer
- Wifi / Ethernet, RS232 and IR control
- Google Cast/UPnP capability for streaming audio
- Bluetooth
- Free MusicLife iOS UPnP and control app

Stunning Realism, Immersive Sound

The AVR30 is a high-performance audio/visual receiver that delivers stunning realism for the ultimate home cinema experience. With an impressive 16-channel surround solution and featuring all the latest CODECs from Dolby, DTS and IMAX Enhanced, the AVR30 exemplifies sound quality and engineering excellence.

The AVR30 boasts the dynamic class G amplification, powering the most complex speakers with ease while delivering great efficiency. Audiophile listening experiences are optimised with full 16-channel Dirac calibration on board as well as simple streaming with a mobile device using the native app of choice via Apple AirPlay2 or Google Chromecast.

DOLBY ATMOS **IMAX** ENHANCED **HDMI**

COMPATIBLE
DOLBY
VISION

dts
X

dts
VIRTUAL
X

Dirac Live

Continuous power output, per channel, 8Ω/4Ω

2 channels driven, 20Hz - 20kHz, <0.02% THD	120W/200W
2 channels driven, 1kHz, 0.2% THD	140W/220W
7 channels driven, 1kHz, 0.2% THD	100W/180W
Residual noise & hum (A-wtd)	<0.15mV

Stereo Line Inputs

Maximum input	4.5V rms
Nominal sensitivity	1V, 2V, 4V (user adjustable)
Input impedance	47kΩ
Signal/noise ratio (A-wtd ref 100W) normal/stereo direct	100dB/110dB
Frequency response	20Hz—20kHz ± 0.2dB

Preamplifier Outputs

Nominal output level	1V RMS (max. 5V RMS)
Output impedance	560Ω
THD+N (20Hz—20kHz)	−100dB

Headphone Output

Maximum output level into 32Ω	5Vrms
Output impedance	<100Ω

General

Mains voltage	110–120V or 220–240V, 50–60Hz
Power consumption (maximum)	1.5kW (Thermal dissipation approx. 5200 BTU/hour)
Power consumption (idle, typical)	100W (Thermal dissipation approx. 340 BTU/hour)
Power consumption (standby)	<0.5W
Dimensions W x D (including speaker terminals) x H (including feet)	433 x 425 x 171mm
Weight (net)	18.1kg
Weight (packed)	21.4kg
Supplied accessories	Mains lead Remote control with 2 x AAA batteries Manual DAB/FM aerial 3 x WiFi/Bluetooth antennas Calibration microphone USB cable
EAN	6925281947049

ARCAM

MANDATORY SOFTWARE UPDATE

Dear Arcam Owner,

Thank you for purchasing this Arcam product and being one of the first in the world to own the very latest generation in a long history of class-leading AV equipment. We are confident that you will enjoy many years of listening and viewing pleasure from its use.

As you may have noticed the box of your new Arcam product was opened. Our warehouse team in Louisville, Kentucky have opened every Arcam product to insert a USB STICK with a very important software update that needs to be done prior to setting the product up for operation. Please read the supplied instructions carefully and if you have questions, please contact our tech support team at 888-691-4171.

There is also a video at http://www.arcamupdate.co.uk/videos/Arcam_AVR_update.mp4

Please also register your ownership of this product with us at www.arcam.co.uk – follow the link to product registration. This website is also an excellent place to learn more about complementary Arcam products as well as future news and upgrades to your new Arcam product.

With best regards,



Nicholas Clarke
Senior Director, Global Engineering, Luxury Audio

AVR10/AVR20/AVR30/AV40 Software Release Notes

To update via USB (recommended):

The USB stick should be empty and freshly formatted

Unzip the file AVR_1v22_0v472.zip & put the unzipped file AVRx0_system1v22.fw onto a memory stick (so it is the only file on the stick)

Turn on the AVR & wait until fully started (approx. 30 seconds for network module to fully start).

Insert the stick into the USB socket on the rear of the AVR.

Simultaneously press INFO & DISPLAY on the front panel until the front display shows UPDATE... (it will alert that there is no network file)

Wait for the USB stick to be searched

Wait around 20 minutes, do NOT power off during this time.

Once the Update has finished perform a Factory Reset*

Put the unzipped file image.swu onto a memory stick (so it is the only file on the stick)

If not already, turn on the AVR & wait until fully started (from power on wait at least 30 seconds for the network module to fully start)

Simultaneously press INFO & DISPLAY on the front panel until the front display shows UPDATE ...

Wait for the USB stick to be searched

Wait around 20 minutes, do NOT power off during this time.

Once the Update has finished perform a second Factory Reset*

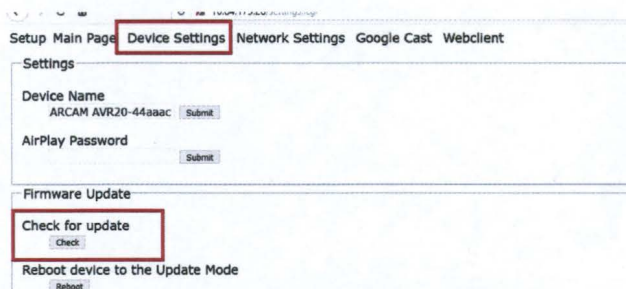
To update via the internet:

Use a browser and navigate to the IP address of the unit (located in Menu > Network > IP Address)

On the Main Page, check "Device version" if this shows "0.100.472" then skip to "To update the main unit..."

If the Device version is not "0.100.472", then click "Device Settings"

Click "Check for update"



Accept the update – this will take around 20 minutes.

To update the main unit, press and hold the menu key on the unit for five seconds to enter the engineering menu.

Select "Check for Update".

If an update of the main unit is available, the update will begin.

Wait around 90 minutes, do NOT power off during this time.

The AVR will restart after completing the upgrade.

Once the Update has finished perform a Factory Reset*

To check your software version, press INFO & DIRECT simultaneously, the front display will show:

MCU Ver
1v22/09

*The unit MUST be restored to factory defaults and any setup changes made again after an update. To do this, press and hold the MENU key on the unit for approximately 5 seconds (until the front panel display shows the engineering menu), release the MENU key, then press OK, then press DIRECT. The unit should then power cycle to standby.

Due to the EEPROM contents changing between software versions, restoring settings from a secure backup is NOT recommended.

FMJ

**THIS TOP QUALITY FMJ PRODUCT COMES WITH AN
EXTENDED 5 YEAR WORLDWIDE WARRANTY***

**TO QUALIFY FOR THE EXTENDED WARRANTY, THE UNIT MUST
BE REGISTERED WITH ARCAM.**

REGISTER ONLINE AT www.arcam.co.uk.

A REGISTRATION CODE WILL BE ISSUED TO YOU.

The product is only covered under this extended warranty once this registration code has been issued. The registration code must be quoted on all repair work. If not registered, then the standard Arcam warranty applies.

***EXCLUDES LASER MECHANISMS**

E&OE 01/10

ARCAM

Bringing movies and music to life

ARCAM

Serial Number:



Dear Arcam Owner

On behalf of the Arcam team, I would like to thank you for purchasing this Arcam hi-fi or home cinema product.

I trust that the care and effort we have put into building this equipment will be amply demonstrated in its superior performance and reliability, ensuring that you enjoy many years of listening/viewing pleasure.

I'd like to invite you to register your ownership of this equipment with us

Registering will prove useful should your Arcam equipment ever be damaged, stolen or in need of servicing. As a registered owner, we can also keep you up to date with any information relevant to your hi-fi or home cinema system, including upgrade opportunities and news updates. You can register online at www.arcam.co.uk – follow the link to Product Registration.

I need hardly add that anything you tell us will be treated in the strictest confidence and will not be disclosed to third parties; we take our customers' privacy very seriously.

With best wishes and thanks

Scott Campbell
Sales Director, Arcam