DIGITAL CINEMA

AVAILABLE AT DIGITAL CINEMA

ARCAM | HDA

INTELLIGENT INTEGRATED AMPLIFIER
AMPLIFICATEUR INTELLIGENT INTÉGRÉ
INTELLIGENTER INTEGRIERTER VERSTÄRKER
INTELLIGENTE GEÏNTEGREERDE VERSTERKER
AMPLIFICADOR INTEGRADO INTELIGENTE
ИНТЕЛЛЕКТУАЛЬНЫЙ
AMPLIFICATORE INTELLIGENTE
智能集成放大器
인텔리전트 인티앰프

SA30

HANDBOOK
MANUEL
HANDBUCH
HANDLEIDING
MANUAL
РУКОВОДСТВО
MANUALE
手册
핸드북

HANDBOOK

ARCAM HDA

INTEGRATED AMPLIFIER

SA30

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 been 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	ATTENTION
RISK OF ELECTRIC SHOCK DO NOT OPEN	RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR
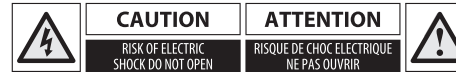
CAUTION: To reduce the risk of electric shock, do not remove cover (or back). No user serviceable parts inside. Refer servicing to qualified service personnel.

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 62368-1 international electrical safety standard.

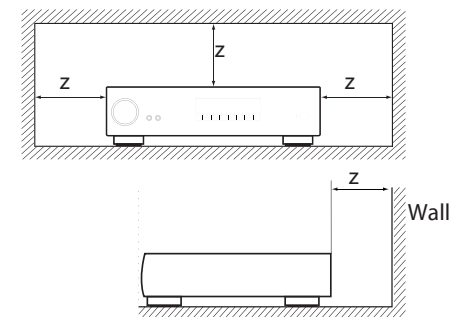This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

This product 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.

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.

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 receiver.

☐ Connect the product into an outlet on a circuit different from that to which the receiver is connected.

☐ Consult the local retailer authorized to distribute this type of product or an experienced radio/TV technician for help

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 by covering the ventilation openings with items, such as newspapers, tablecloths or curtains.

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

☐ 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.

To prevent possible harm to the environment or human health from uncontrolled waste disposal and to conserve material resources, this product should be recycled responsibly.

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

Welcome

Thank you and congratulations...

...for purchasing your Arcam SA30 integrated amplifier.

Arcam has been producing specialist audio products of remarkable quality for over four decades and the new SA30 integrated amplifier is 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 stereo amplifiers yet – designed and built to give you years of listening enjoyment.

This handbook is a guide to installing and using the SA30 and includes information on its more advanced features. Use the contents list on the next page to guide you to the section of interest.
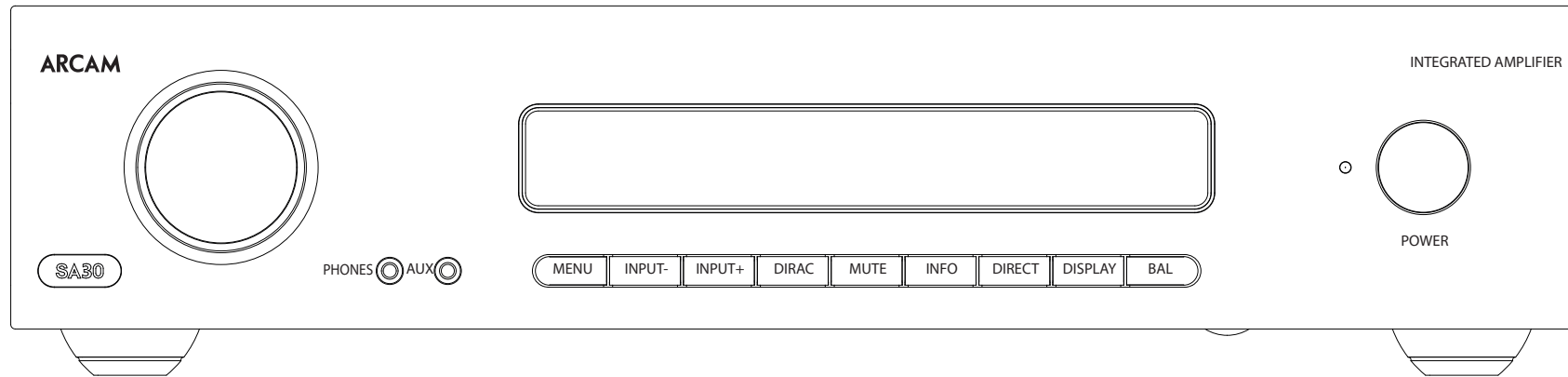
We hope that your product will give you years of trouble-free operation. In the unlikely event of any fault, or if you simply require further information about Arcam products, our network of dealers will be happy to help you. Further information can also be found on the Arcam website at *www.arcam.co.uk*.

Your SA30 development team

Contents

Overview

Arcam's SA30 amplifier

Arcam's SA30 integrated amplifier provides class leading sound quality for the best reproduction of your music from traditional HiFi separates and the various internet streaming services that are on offer.

The SA30 also includes the powerful Dirac Live room correction functionality that has been used to critical acclaim in our AVR range.

Drawing on the many years of amplifier design experience at Arcam, this product uses the best quality components and engineering practice to produce a product that will give many years of musical pleasure and reliable service.

The SA30 is designed to produce a level of performance that will truly bring your music to life.

Placing The Unit

☐ Place the amplifier on a level, firm surface, avoiding direct sunlight and sources of heat or damp.

☐ Do not place the SA30 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. The SA30 is designed to 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 to the right of the front panel display is unobstructed, otherwise this will impair the use of the remote-control.

☐ 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.

☐ The normal function of the unit may be disturbed by strong electromagnetic interference. If this occurs, simply reset the unit with the power button, or move the unit to another location.

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

Push the IEC plug end of the power cable into the power 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 switch the socket on.

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.

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MQA	MQA and the Sound Wave Device are registered trade marks of MQA Limited.© 2016

MQA (Master Quality Authenticated).

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.

Visit **mqa.co.uk** for more information.

The SA30 includes MQA technology, which enables you to play back MQA audio files and streams, delivering the sound of the original master recording.

MQA or **MQA.** 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. 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.

Front Panel Connections and Controls

VOLUME CONTROL
See "Volume Control" on page EN-13

AUX INPUT
Analogue 3.5mm stereo socket, intended for connecting an external analogue source

POWER INDICATOR AND POWER SWITCH
See "Switching On" on page EN-12

ARCAM

INTEGRATED AMPLIFIER

SA30

PHONES   AUX

MENU | INPUT- | INPUT+ | DIRAC | MUTE | INFO | DIRECT | DISPLAY | BAL

POWER

PHONES
3.5mm stereo socket, intended for use with headphones.
See "Listening Using Headphones" on page EN-13

FRONT PANEL KEYS	
MENU	Opens the setup menu. See "Setup Menu" on page EN-20.
INPUT- / INPUT+	Selects input for listening. See "Selecting An Audio Source" on page EN-12.
DIRAC	Selects the Dirac room EQ curve. See "Dirac Live for Arcam" on page EN-15.
MUTE	Mutes the various audio outputs. See "Muting The Output" on page EN-13.
INFO	Cycles through the information displayed on the lower portion of the front panel display when on NET and USB inputs.
DIRECT	Enables or disables Analogue Direct listening mode. See "Analogue Direct" on page EN-13.
DISPLAY	Adjusts the display brightness. See "Display" on page EN-12.
BAL	Adjusts the left/right balance of the output. See "Balance" on page EN-20.

⚠️ **The SA30 is designed to run warm in normal use, however extended use at high volume levels can result in the amplifier casework becoming hot to the touch.**

Rear Panel Connections and Controls

POWER INLET
Connect the correct mains cable here

VOLTAGE SELECT
Ensure that the voltage selected matches the local power supply

ARC/eARC
Connect ARC/eARC enabled TV input here. See "ARC/eARC input" on page EN-13

WiFi ANTENNA
Install WiFi antenna here if wireless network connection is required

DIGITAL AUDIO INPUTS
Optical and coaxial digital audio connectors. See "Digital Audio Inputs" on page EN-12

SPEAKER TERMINALS
See "Connecting Loudspeakers" on page EN-10

WiFi ANTENNA

NET

ARC / eARC

WiFi ANTENNA

DIGITAL IN

SAT   GAME   AV

BD

SERVICE

R   L

4-16 OHMS

POWER INLET

USB
5V ⎓ 100mA

SUPPLY
VOLTAGE

RS232

L

R

CD   PVR   STB   PHONO   PHONO   PRE
                    (MM)   (MC)   OUT

ANALOGUE IN

110-120V/220-240V ~ 50/60Hz
500W MAX

SWITCH POSITIONS
115 = 110 - 120V ~
230 = 220 - 240V ~

NETWORK
Connect this socket to a port on your network router using an Ethernet patch cable. See "Home Automation Control" on page EN-14

RS232
This connection allows for remote control from a third-party home automation system or computer. See "Home Automation Control" on page EN-14

ANALOGUE AUDIO INPUTS
Phono and line level audio inputs. See "Analogue Audio Inputs" on page EN-12 and "Phono Input" on page EN-12

PRE-AMPLIFIER OUTPUT
Provides the pre-amplifier output for use in a bi-amplified system. See "Pre-Amplifier Output" on page EN-13

PHONO GROUND CONNECTION
Connect the turntable earth lead, if required
⚠ **Note that this terminal must not be used as a safety earth**

USB Type A
This USB socket is used playback of audio files from pen drives.

⚠ **Please read the sections "Placing The Unit", "Power" and "Interconnect Cables" on page EN-6 before connecting your SA30 amplifier!**

Connecting Loudspeakers

There are many different ways of connecting loudspeakers to your SA30 amplifier. The following section describes how to connect the speakers and amplifier for the most common configurations.

Single Wiring

If each speaker has more than one pair of connecting terminals, use the terminals labelled '**LF**' or '**Low Frequency'** on your speakers.

Connect the red positive terminal of the right speaker connection on the amplifier (labelled **R+**) to the positive terminal of your right speaker. Similarly, connect the black negative terminal of the right speaker connection on the amplifier (labelled **R-**) to the negative terminal of your speaker. Repeat the process for the left speaker, using the terminals labelled **L+** and **L-** on the amplifier.

WARNING: If your speakers support bi-wiring, there will be a strip of conductive metal connecting the low-frequency (LF) terminals to the high-frequency (HF) terminals; this MUST NOT BE REMOVED in a single-wired system.
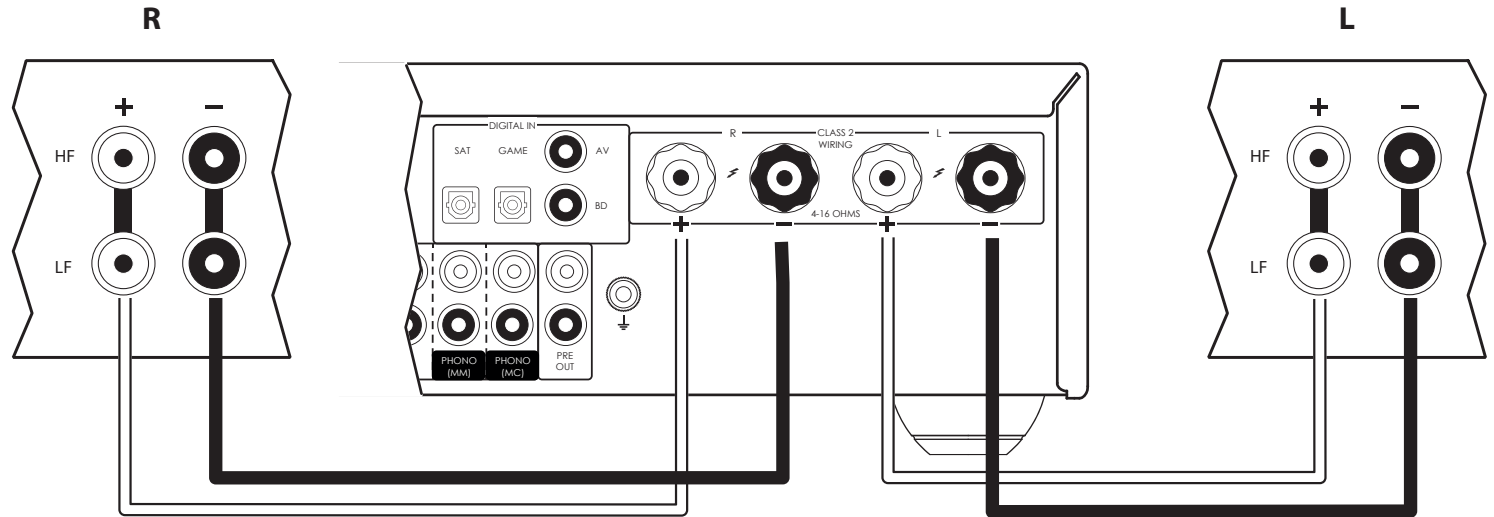
Notes On Making Speaker Connections

☐ Do not make any connections to any amplifier while it is switched on. We recommend that your amplifier is completely disconnected from the mains supply before starting.

☐ Before switching your amplifier on for the first time after connecting to speakers, please check all connections thoroughly. Ensure that bare wires or cables are not touching each other or the amplifier's chassis (which could cause short circuits), and that you have connected positive (+) to positive and negative (–) to negative. Be sure to check the wiring for both the amplifier and the speaker.

☐ After making connections: switch the amplifier on, select a source signal, then gradually increase the volume to the required listening level.

☐ If you are unsure as to how your system should be connected, please contact your Arcam dealer who will be happy to help you.

Bi-Amping

Bi-amping is the separation of the amplification of low and high-frequency signals over two amplifiers.

Bi-amping requires the use of two amplifiers per channel. Normally, your SA30 is used to drive the high frequency (treble) speakers, while a second amplifier (such as the Arcam PA240) is used for the lower (bass) frequencies.

Connect the SA30 to the speakers as described for single wiring, with the exception that the SA30 should be connected to the speaker terminals labelled '**HF**' or '**High Frequency**'. Next, connect the PA240 power amplifier to the '**LF**' or '**Low Frequency**' terminals, as shown in the diagram. A pair of audio interconnect cables are also required to connect the pre-amp outputs of the SA30 to the power amplifier inputs of the second amplifier.

WARNING: The strip of metal on the speakers connecting the low frequency (LF) terminals to the high frequency (HF) terminals MUST BE REMOVED. Failure to do so will result in damage to both amplifiers, which will not normally be covered under warranty.
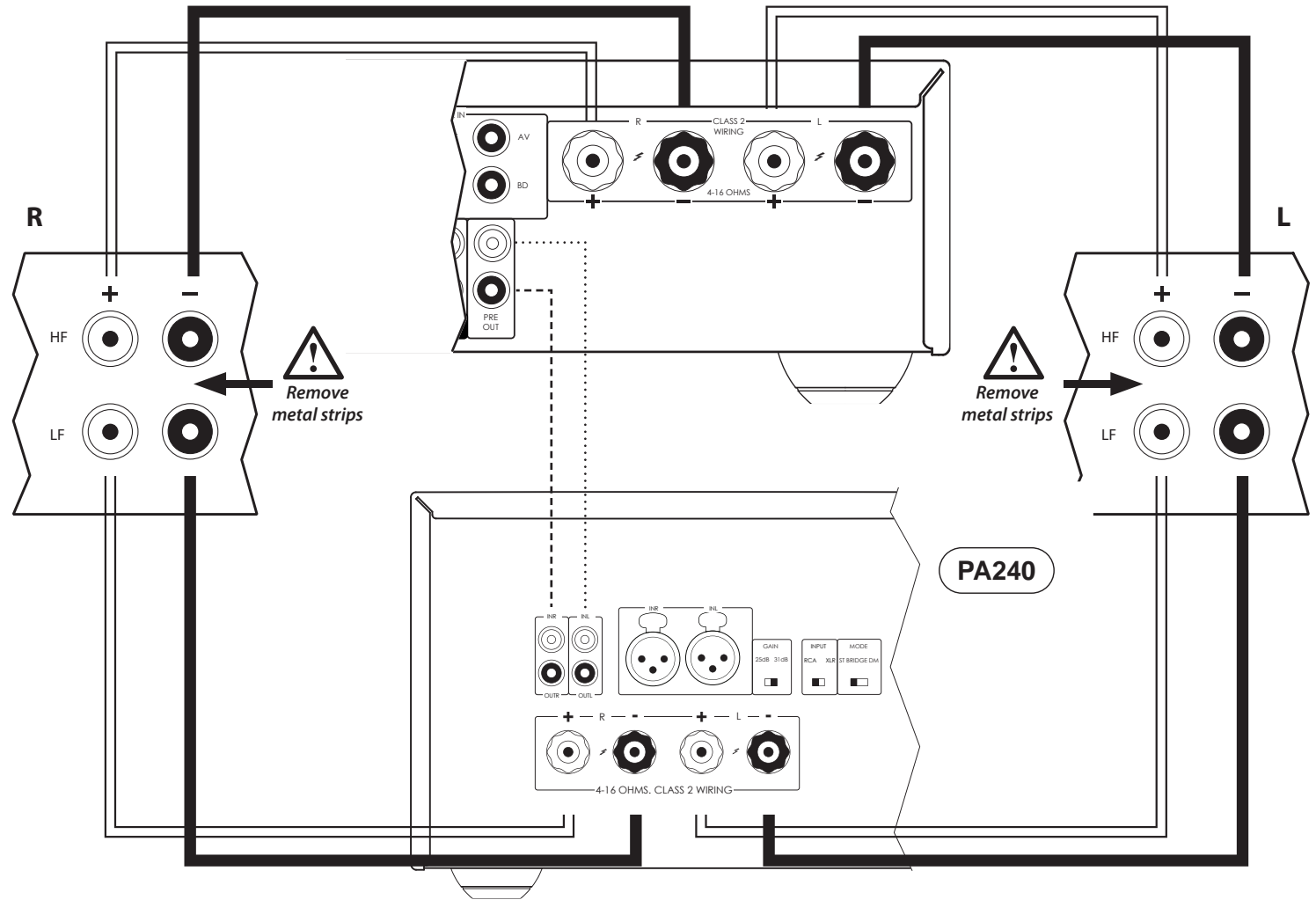
Operation

Switching On

The **POWER** button switches the unit on and off. The status indicator LED indicates the state of the amplifier: it changes from red to orange then white if mains power is connected and the unit is switched on.

Setup Menu

The SA30 setup menu allows the customization of certain features of the amplifier. For details, please see "Setup Menu" on page EN-20.

Auto Standby

In order to comply with international regulations for consumer products, this unit is designed to enter a low power standby mode if no user interaction and no audio input signal are detected for an extended period of time (default time is 20 minutes). The unit can be brought out of standby by either turning the volume knob on the front panel in either direction or by pressing the **POWER** key on the remote control.

The amount of time before the unit enters standby is configurable in the setup menu.

Note: if the standby time-out is set to OFF, the standby feature will be disabled.

Display

Press the **DISPLAY** button on the front panel or remote control to adjust the brightness level of the front panel display. The brightness level can be set to 'FULL', 'DIM' or 'OFF'.

If the SA30 is powered off with the display brightness set to 'OFF', the display will momentarily resume to full brightness then turn off when the unit is powered back on.

Selecting An Audio Source

Audio sources can be selected either using **INPUT+/-** the front panel or when the remote control, by pressing the required button, labelled as **PHONO, AUX, NET, USB , AV, SAT, PVR, GAME, BD, CD or STB.** In each case, the source is selected from the input sockets with the corresponding name.

Digital Audio Inputs

The SA30 features two coaxial and two optical digital inputs, which can be connected to the respective digital audio output of your available source equipment. Although the inputs are labelled for specific devices, they can be used to connect any devices with a coaxial or optical digital output.

BD	Intended for the coaxial digital output of a Blu-ray or DVD-player
AV	Intended for the coaxial digital output of general audiovisual equipment, such as a VCR or TV.
SAT	Intended for the optical digital outputs from a satellite TV receiver or cable TV box
GAME	Intended for the optical digital output from a games console

WARNING: The SA30 only supports two channel PCM audio input. Do not attempt to send multichannel audio of any type as this could result in serious damage to your amplifier and speakers

Analogue Audio Inputs

Although the inputs are labelled for specific devices, all have the same characteristics and each may be used with any line-level product.

AUX	This is a 3.5mm analogue input on the front panel intended for use with devices such as MP3 players.
STB	Intended for the analogue outputs of a set-top box
PVR	Intended for the analogue outputs of a Personal Video Recorder, or similar device
CD	Intended for the analogue outputs from a CD player

Phono Input

The SA30 provides a pre-amplification stage to work with the low-voltage output from either a MM (moving magnet) or MC (moving coil) cartridge.

Each cartridge type has a dedicated input on the rear panel. To choose which type is enabled is see "Phono Input" on page EN-21

The **PHONO** input specifications are given in "SA30 Specifications" on page EN-25.

WARNING: NEVER play a standard line-level source into this input. This would result in serious damage to both your amplifier and speakers due to the extra gain that is applied and would not be covered under warranty.

WARNING: Be sure to use the correct input for your cartridge. The requirements for the different cartridges could result in damage to both your amplifier and speakers due the extra gain that is applied if the wrong input is used and would not be covered under warranty.

USB

This input is for playback of audio files from a USB pen drive or similar device. Simply plug in the USB stick and use the remote control to browse.

Network Audio Inputs

In order to use the network audio capability of the SA30 please refer to "Connecting to a Network" on page EN-14 to allow you to use AirPlay, Chromecast built-in or playback from a NAS drive using the Arcam Music Life app.
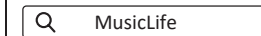
ARC/eARC input

Connect this to the HDMI video input of your display device. It is compatible with HDMI Enhanced Audio Return Channel (eARC) as well as standard Audio Return Channel (ARC). 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 SA30's 'ARC/eARC' input.

See "TV Volume" on page EN-21, "TV Power" on page EN-21 and "TV Audio" on page EN-21 for more information on ARC/eARC settings.

Listening

Volume Control

Use the volume control knob (or the buttons on the remote control) to change the volume. Turn the knob clockwise to increase the volume and counter-clockwise to reduce it.

Listening Using Headphones

The headphone socket (**PHONES**) accepts phones with an impedance rating between 16Ω and 2kΩ, fitted with a 3.5mm stereo jack.

The pre-amp outputs and speakers are muted when the headphones are plugged in.

The speakers and pre-amp outputs can be configured to remain active when headphones are connected using the **Headphone Override** function in the setup menu. See "Phones Ovr" on page EN-20 for more information.

The headphone output is always active, unless the amplifier has been muted.

Muting The Output

The output of the SA30 can be silenced by pressing the **MUTE** button on either the front panel or the remote control. If the unit is muted, front panel power indicator will change to orange and the display will show "**Mute**", instead of the volume level.

To cancel the mute, press **MUTE** for a second time or adjust the volume (either by turning the volume control knob or by pressing the volume control keys on the remote control).

Adjusting The Balance

The balance setting allows you to increase the volume of one channel (left or right) relative to the other. Altering the balance may help restoring the stereo image for an off-centre listening position.

To adjust the balance, press the [BAL] key on the remote control or front panel or via the setup menu. See "Balance" on page EN-20 for more information.

Analogue Direct

In order to apply Dirac Live room correction the SA30 converts all analogue inputs to a digital signal using a high quality Analogue to Digital Convertor (ADC). Once the signal has been processed by the on board Digital Signal Processor (DSP) it is converted back to an analogue signal using a high quality Digital to Analogue Convertor (DAC).

The DIRECT function bypasses the ADC, DSP and DAC to allow the analogue signal to be sent directly to the preamp stage for the purest signal path.

The icon on the display indicates if the analogue direct path is enabled for the current input.

⠢⠒	Analogue direct is enabled. ADC, DSP and DAC are bypassed.

Note: Analogue Direct can only be applied to the CD, PVR, STB and PHONO inputs.

When Analogue Direct is enabled DIRAC room correction cannot be applied.

Processor Mode

Processor mode can be assigned to most analogue inputs. In this mode, the SA30 is set to a fixed level. Please refer to "PM Input" on page EN-20 for details on how to specify which input is to be used in processor mode. For setting the desired fixed volume level, please refer to "PM Input" on page EN-20.

Pre-Amplifier Output

To use the SA30 as dedicated pre-amplifier, or as part of a bi-amped system, connect the **PRE OUT** sockets to the input sockets of your power amplifier.

Connecting to a Network

In order to use the AirPlay and Chromecast built-in functionality of the SA30 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 antenna is fitted to the antenna socket on the rear of the SA30.

Note: When the wired connection is used the wireless connection is automatically disabled.

Home Automation Control

When connected to a network the SA30 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.

Note: To connect the SA30 to a wireless network follow the "Wireless Connection" instructions for either "AirPlay Setup" or "Chromecast built-in Setup".

AirPlay Setup

Wired Connection

Power up and connect an ethernet cable to the SA30.

To listen to audio via AirPlay on your SA30, ensure your Apple device is connected to the same network as the SA30 and simply select the SA30 as the AirPlay audio playback device.

Note: The SA30 will appear as SA30-xxxxxx in the Airplay speaker menu, where xxxxxx is the last 6 digits of the units wired MAC address.

Wireless Connection

Ensure your Apple device is connected to the wireless network you wish to connect the SA30 to.

Install the Wi-Fi antennas and power up the SA30

Open the Wi-Fi settings menu on the Apple device and select the SA30 from the "Set up new AirPlay speaker" menu.

Follow the instructions on screen.

To listen to audio via AirPlay on your SA30, ensure your Apple device is connected to the same network as the SA30 and simply select the SA30 as the AirPlay audio playback device.

Note: The SA30 will appear as SA30-xxxxxx in the AirPlay speaker setup menu, where xxxxxx is the last 6 digits of the units wired MAC address.
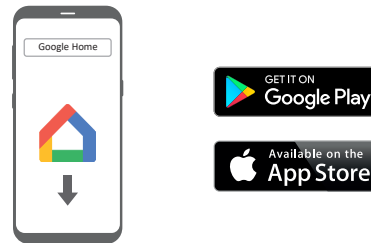
Chromecast built-in Setup

Wired Connection

Power up and connect an ethernet cable to the SA30.

Select the **NET** input.

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 SA30 and follow the instructions on screen.

To listen to cast audio from any supported application on your SA30, ensure your device is connected to the same network as the SA30. Tap the Chromecast built-in icon from within the application and select the SA30 as the playback device.
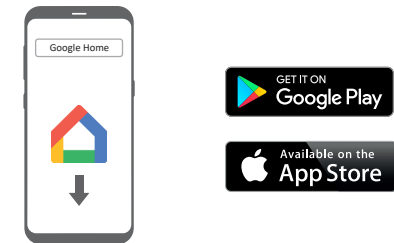
Note: The SA30 will appear as SA30-xxxxxx in the setup menu, where xxxxxx is the last 6 digits of the units wired MAC address.

Wireless Connection

Install the Wi-Fi antennas and power up the SA30.

Select the **NET** input.

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 SA30 and follow the instructions on screen.

To listen to cast audio from any supported application on your SA30, ensure your device is connected to the same network as the SA30. Tap the Chromecast built-in icon from within the application and select the SA30 as the playback device.

Note: The SA30 will appear as SA30-xxxxxx in the setup menu, where xxxxxx is the last 6 digits of the units wired MAC address.

Dirac Live

There is a proprietary automatic loudspeaker setup function built into your SA30 from Dirac Research. Using a PC/Mac based application, this attempts to set all 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 SA30 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 SA30 and positioned as directed by the Dirac Live for Arcam PC/Mac application. This microphone picks up the special calibration tones generated by the speakers when Dirac Live for Arcam application is run. The SA30 then analyses the signal and will correct any resonant frequencies in the room which need control by filtering.

To help the system be as accurate as possible when performing Dirac Live for Arcam 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.

☐ Mount the microphone on a tripod or similar.

☐ Position the set up microphone pointing upwards at roughly head height in the normal listening position. It is not necessary to point the microphone directly at the speaker generating the test tone. (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.)

When activated, a calibration tone is played through each channel of the SA30. The calibration tone cycles round each of the speakers multiple times as the different parameters are calculated.

Note: 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 setup menu or by the front panel or remote control button.

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

The Auto Speaker Setup function is normally very 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.

Downloading the Dirac Live for Arcam application

To download the Dirac Live for Arcam 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 SA30. 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 **DIRAC** key on the front panel or **AUDIO** key on the remote.

Alternatively use the Dirac menu in the Audio settings menu to set the curve for each input. See "Dirac Curve" on page EN-20.

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.

When Dirac is being used the ⬚ icon will be shown on the display.
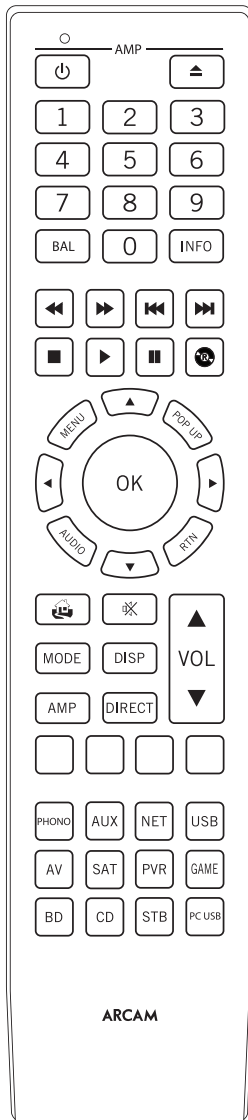
The remote control is a sophisticated 'universal' back lit remote control that can control up to 8 devices. It is pre-programmed for use with the SA30 and Arcam CD and Blu-Ray players.

With its extensive library of codes it can also be used with thousands of third party AV components. See the list of codes at the back of this manual

Make sure the two AAA batteries (supplied) are installed before attempting to use 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.

The remote control requires a clear line of sight to the front panel of the SA30 to ensure reliable operation.

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.

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 radiated 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.

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 keys select the source on the SA30 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.
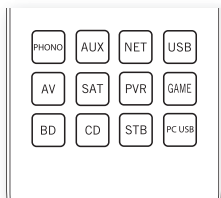
PHONO	MM or MC Phono input
AUX	Auxiliary input
NET	Network input (e.g. Internet radio/NAS drive)
USB	External USB device (Pen drive, etc.)
AV	Audio-visual sound input (use with TV)
SAT	Satellite input
PVR	Personal Video Recorder (or Digital Video Recorder) input
GAME	Games console input
BD	Blu-ray Disc or DVD player
CD	Compact Disc player input
STB	Set Top Box decoder input
PC USB	ARC/eARC 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.

Volume control

By default, the remote is set up so that the volume control and mute buttons always control the volume of the SA30, 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, "Customising the Remote Control" on page EN-22

AMP Device Mode

The AMP Device Mode button configures the remote to control the SA30. Pressing this button does not affect the currently selected input on the SA30.

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

⏻	Toggles power between standby and on.
0......9	The number keys can be used for direct entry of numeric values.
BAL	Adjust the left right balance of the audio output. Use the ◀ and ▶ navigation buttons to adjust the balance direction.
INFO	Info cycles through the information displayed on the lower portion of the front panel display when on NET and USB inputs.
MENU	Enters the setup menu.
AUDIO	Toggles Dirac Live EQ on/off.
RTN	Exits the current setup menu.
※	Toggles the output mute.
VOL	Adjust amplifier volume.
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 audio outputs. Only applicable to the analogue inputs.
[nav]	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. AMP + ▲ Power on from standby AMP + ▼ Standby from Power on
PHONO	MM or MC Phono input

AUX	Aux input.
NET	Network (NET) 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.
PC-USB	ARC/eARC input

Network and USB commands

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

[nav]	Navigates the files on the Network or USB drive.
[transport]	Play, pause, stop, skip forward, skip backward, fast forward and rewind
[home]	Returns navigation to the top level of the network client menus ('Home')

BD/DVD Device Mode

The BD Device Mode button selects BD as the source.

The button is configured to control the BD functions of Arcam BD players, 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	Functions as original remote number key
DISP	Cycles through the front panel display's brightness options.
MODE	Cycles through the repeat options (track, disc, etc.).
◄◄ ►►	Fast rewind/forward.
◄◄ ►►|	Skip back/forward
■	Stop playback of a BD or DVD.
►	Play the current track.
‖	Pause playback.
●	Start recording (on products that have this feature).
MENU	Disc menu.
POP UP	Activates BD/DVD player menu, if available.
navigation pad	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. 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.

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, 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	Functions as original remote number key
DISP	Cycles through the front panel display's brightness options.
MODE	Cycles through the repeat options (track, disc, etc.).
◄◄ ►►	Fast rewind/forward.
◄◄ ►►|	Skip back/forward
■	Stop playback of a CD
►	Play the current track.
‖	Pause playback.
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.
navigation pad	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. CD + ▲ Power on from Standby CD + ▼ Standby from Power on.
AMP	Resets remote to AMP mode.

AV Device Mode

The AV Device Mode button configures the remote to control the functions of a television. Pressing this button also selects AV as the source.

⏻	Toggles power between standby and on.
0...9	Functions as original remote number key
DISP	Display INFO or OSD (On Screen Display) function, if available.
MODE	AV; this function is TV specific.
◄◄ ►►	Channel down/up.
INFO	Displays picture information; this function is TV specific.
POP UP	Guide.
navigation pad	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.

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
DISP	Display INFO or OSD (On Screen Display) function, if available.
MODE	Selects the Library or Media function.
◀◀ ▶▶	Fast rewind/forward.
◀◀ ▶▶	Channel down/up.
■	Stop playback.
▶	Start Playback
∎	Pause playback.
●	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.
(navigation/OK pad)	Navigate setup and programme selection menus. OK confirms a selection (equivalent to 'Enter' or 'Select' on some remotes).
(home)	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
DISP	Display INFO or OSD (On Screen Display) function, if available.
◀◀ ▶▶	Channel down/up.
INFO	Displays programme information.
POP UP	Guide (or Setup on some set top boxes).
(navigation/OK pad)	Navigate setup and programme selection menus. OK confirms a selection (equivalent to 'Enter' or 'Select' on some remotes).
(home)	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
INFO	Display INFO or OSD (On Screen Display) function, if available.
MODE	Selects the Library or Media function.
◀◀ ▶▶	Fast rewind/forward.
◀◀ ▶▶	Channel down/up.
■	Stop playback.
▶	Start Playback
∎	Pause playback.
●	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.
(navigation/OK pad)	Navigate setup and programme selection menus. OK confirms a selection (equivalent to 'Enter' or 'Select' on some remotes).
(home)	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.

Setup Menu

The setup menu allows you to configure various aspects of the SA30 integrated amplifier.

Entering Setup Menu

To enter the setup menu, press the **MENU** key on the remote control or front panel.

Navigating The Setup Menu

The setup menu can be navigated by using the remote control or pressing the front panel keys that correspond to the function shown on the display, as shown below.

To change a setting, simply turn the control knob left or right.

```
Processor Mode
```

| DIRAC | MUTE | INFO | DIRECT | DISPLAY |

	HOME	Exit the menu and return to the home display
	UP	Navigate to the previous menu option
	DOWN	Navigate to the next menu option
	LEFT	Navigate left or move to the previous field
	RIGHT	Navigate right or move to the next field
	OK	Save the current setting and move to next option
	BACK	Save the current setting and exit menu option

System Settings

Display

Allows the brightness of the front panel display to be changed. The available settings are **Full**, **Dim** and **Off**. The default setting is **Dim**.

Dark Mode

Turns front panel display and status LED off.

Enable Input

Allows unused inputs to be removed from the input selection list from the front panel. Inputs can still be selected via remote control.

Timeout

This option allows you to choose the length of idle time before the unit goes into standby. The available options are **Off**, **20**, **30** minutes, **1**, **2** and **4** hours. The default setting is **20** minutes.

System Code

Change the IR system code that the SA30 responds to (either **16** or **19**). The default code is **16**.

Net Reset

Resets the network module to factory settings.

System Reset

Restores the SA30 to its factory default settings.

USB Update

Allows the SA30 to be updated via a USB stick. Refer to the software release instruction for more details available at ***www.arcam.co.uk.***

OTA UPG

If enabled the SA30 will update automatically if left powered on overnight or in network standby. If disabled software updates need to manually installed. Refer to the software release instruction for more details available at ***www.arcam.co.uk.***

System Info

Displays various system parameters including MCU, Network and ARC software version numbers, IP address, Friendly name, Googlecast name and serial number.

Audio Settings

Dirac Curve

Specify which Dirac calibration is applied to each input.

Note: When Dirac is run for the first time the curve will be applied to all inputs.

Balance

Turn the SA30 volume control knob left and right to change the left and right channel balance, respectively.

Phones Ovr

Control whether or not the speaker outputs are muted when a pair of headphones are connected to the **PHONES** socket on the front panel. The default is **Off** so the speakers and pre-outs will be muted when headphones are connected.

PM Input

Specify which input is to be used in processor mode. This mode can be assigned to most analogue inputs. In this case, the SA30 output level is set to a fixed level. The default setting is **None**.

Note: The **PHONO** input cannot be selected as the processor input.

PM Volume

Specify the required volume level for the processor mode input. The default is volume is **30**.

Max On Vol

Limits the maximum volume when the SA30 is switched on or comes out of Standby. The SA30 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.

Maximum Vol

Limits the maximum volume setting the SA30 can be turned up to for external inputs. This is a useful feature to prevent accidental overdriving of low power-handling speakers. It is stored in memory and recalled each time the unit is powered up.

Max Net Vol

Limits the maximum volume setting the SA30 can be turned up to for streamed content. This is a useful feature to prevent accidental overdriving of low power-handling speakers, or to prevent volume being accidently set to maximum using streaming app volume sliders. It is stored in memory and recalled each time the unit is powered up.

TV Volume

When set to **OFF** any volume commands sent by the TV via the ARC/CEC connection will be ignored by the SA30.

TV Power

When set to **OFF** any power commands sent from the TV via the CEC connection will be ignored by the SA30.

TV Audio

When set to **OFF** the SA30 will not automatically switch to the ARC input. In this case use the PC-USB button on the remote control or the INPUT+/- buttons on the front panel.

Lip Sync

Specify the amount of audio delay to be applied to an input.

Analogue Direct

Specify which analogue inputs should operate in analogue direct mode.

Phono Input

Selects which Phono input is used, Moving Magnet (MM) or Moving Coil (MC)

Filter

Specify which digital filter is used in the DAC. Apodizing; Linear Phase Fast Roll Off; Linear Phase Slow Roll Off; Minimum Phase Fast Roll Off; Minimum Phase Slow Roll Off; Brick Wall or Corrected Minimum Phase Fast Roll Off.

See "SA30 Digital Filters" on page EN-21 for more explanation on the differences between the filters.

Network Settings

Network Info

Displays the units wired and wireless MAC address, IP address and friendly name and host name.

Net Standby

Enables or disables the network control of the SA30 while the unit is in standby. The default setting is **Off**.

Note: The unit can still be controlled via RS232 commands, even when network standby is disabled.

RS232 Standby

Enables or disables the RS232 control of the SA30 while the unit is in standby. The default setting is **Off**.

C4 SDDP

Enables the Control 4 discovery function and enables the sending of a discovery beacon.

The SA30 allows the listener to choose between a number of digital filters for use in the audio DAC. Digital filters are required to minimise unwanted antialiasing distortion in the audio band but no digital filter is perfect, all are a compromise between various parameters. These include:

Frequency response – Audio level with respect to frequency. Ideally this should not vary significantly between 20Hz and 20kHz.

Phase – The time delay introduced between reproducing different frequencies within the pass band of the filter. Ideally this would be as low as possible (linear phase).

Pre ringing – Additional audio artefacts that precede the original audio impulse. These are sometimes thought to be bad as this phenomenon does not exist in the natural world, so ideally this should be as low level and last for as short a time as possible.

Post ringing – Additional audio artefacts that follow the original audio impulse. Ideally these should be as low in level and last for as short a time as possible.

Aliasing – Additional audio artefacts introduced into the audio band from high frequency signals.

We have chosen our default filter through a combination of careful measurement and listening tests and we believe they are the best compromise to achieve the best listening experience. However, all of the filters sacrifice performance of one parameter to improve another. Therefore, dependant on your choice of listening material and personal preference, you may wish to choose one of the other options. Note that any audible differences are most likely to be heard with sample rates of 48kHz and below.

Brick Wall (B Wall)

No phase shift, but introduces both pre and post ringing artefacts.

Corrected Minimum Phase Fast Roll Off (Corr MinP)

Low pre-ringing and the phase response varies at higher frequencies. There is more post ringing compared with linear phase and apodizing filters.

Apodizing (default)

A compromise between phase, frequency response and ringing. Its main advantage is that it removes most of the ringing that has been introduced upstream in the recording process when the original material was recorded and mastered.

Minimum Phase Slow Roll Off (MinP Slow)

No pre-ringing artefacts but can introduce phase shifts at higher frequencies. It has less post ringing than the Minimum Phase Fast Roll Off, but this is still higher than the linear phase filter options. Very high frequencies in the last half octave of the filter pass band will be slightly attenuated.

Minimum Phase Fast Roll Off (MinP Fast)

No pre-ringing and the phase response varies at higher frequencies. There are significantly higher amounts of post ringing compared with the linear phase filter options.

Linear Phase Slow Roll Off (LinP Slow)

Low and equal levels of pre and post ringing. No phase shifts but can introduce high frequency aliasing at a higher level than linear phase fast roll off. Very high frequencies will be slightly attenuated.

Linear Phase Fast Roll Off (LinP Fast)

Higher and equal levels of pre and post ringing compared with linear phase slow roll off. No phase shifts and with minimal high frequency aliasing compared with slow roll off.

Customising the Remote Control

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.

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

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.

4. 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.)

5. 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 **USB** 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 ▶ key for three seconds until the LED blinks twice ☼☼☼.

3. If any further key press is not made for 30 seconds after the LED blinks twice ☼☼☼, the remote leaves erase mode without deleting the learned data.

4. If you press the Device 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:

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 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.

3. If any further key press is not made for 30 seconds, the LED blinks twice ☼☼☼, the remote get out of the erase mode automatically without deleting the learned data.

4. 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

1. 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.

2. 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)
PC USB	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.).

1. 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.

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

3. 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: ✴✴✴✴✴✴.

4. 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
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 at the end 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)" on page EN-22

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)" on page EN-22 This method allows you to scan through every code contained in the remote's memory.

Troubleshooting

Problem	Check the following
No sound	☐ The SA30 amplifier is correctly plugged in and switched on
	☐ Your audio source is correctly connected, the correct input is selected and it is not muted
	☐ The SA30 is not in protection mode, as described below
Sound cuts-out unexpectedly	The SA30 may enter a protection mode if a fault is detected. The front panel LED will indicate the fault type, according to the list below
	☐ FLASHING WHITE: The internal temperature of the unit reached an unsafe level. Allow the SA30 to cool off
	☐ FLASHING RED: The SA30 amplifier detected a speaker short circuit. Should this happen, please inspect all the speaker cables to make sure none of them are shorted together. This fault is very common when bare wires are being used to make speaker connections
	☐ FLASHING ORANGE: The amplifier detected a DC offset.
	Following any of the faults described above, the amplifier will turn itself off and power to the speakers will be removed. To continue using the SA30, the fault must be removed and the unit must be turned OFF then back ON
The unit responds erratically or not at all to the remote control	☐ There are fresh batteries in the remote control
	☐ The front panel window is visible and you are pointing the remote control towards it
	☐ The remote is in the correct mode to control the unit i.e by pressing the AMP button before controlling the SA30.
The front panel display is blank	☐ The display hasn't been turned off. Press the **DISPLAY** button on the remote control. See "Display" on page EN-12
Hum on the analogue input	☐ 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)
	☐ The connections inside the source cable connector are not broken or badly soldered
	☐ 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

SA30 Specifications

Continuous power output (0.5% THD), per channel		
Both channels, 8Ω, 20Hz—20kHz	130W	
Both channels, 4Ω, at 1kHz	200W	
Harmonic distortion, 80% power, 8Ω at 1kHz	0.002%	
Analogue Inputs		
ADC	AK5552	
Sample rate / bit depth	192kHz / 32 bit	
Phono Inputs	Moving Magnet (MM)	Moving Coil (MC)
Input sensitivity at 1kHz (nominal)	5mV	0.35mV
Input impedance	47kΩ + 200pF	470Ω + 1nF
Signal/Noise ratio (A-wtd)	80dB, ref. 5mVat 1kHz	80dB, ref. 0.35mV at 1kHz
Overload margin	21dB ref. 5mV at 1kHz	21dB ref. 0.35mV at 1kHz
Frequency response (ref. RIAA curve)	20Hz – 20kHz ± 1dB	20Hz – 20kHz ± 1dB
Line Inputs:		
Nominal sensitivity	1V	
Input impedance	10kΩ	
Maximum input	4.8Vrms	
Frequency response	20Hz – 20kHz ± 0.2dB	
Signal/Noise ratio (A-wtd) 100W, ref. 2.1V input	112dB analogue direct, 106dB ADC / DAC	
Digital Inputs		
DAC	ESS9038K2M	
Frequency response	20Hz - 20kHz ± 0.1dB	
Total harmonics distortion + Noise	0.0007%	
Signal/Noise ratio (A-wtd) ref. 0dBFS/100W	113dB	
Supported sample rates	Optical	32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz
	Coaxial	32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, 176.4kHz, 192kHz
Bit depth	16-bit – 32-bit	

Pre-amplifier output	
Nominal/Maximum output level	800mV / 1.25V
Output impedance	240Ω
Headphone output	
Maximum output level into 600Ω	5Vrms
Output impedance	1Ω
Load range	16Ω – 2kΩ
General	
Mains voltage	110–120V or 220–240V, 50/60Hz
Maximum power consumption	800W
Low power standby consumption	0.5W
Network standby consumption	2W
BTU rating	631 BTU
Dimensions W x H x D (including feet, control knob and speaker terminals)	433x100x323mm
Weight (net)	10.7kg
Weight (gross)	13.8kg
Supplied accessories	Mains leads Remote control 2 x AAA batteries User Manual 2 x WiFi Antenna Setup microphone USB cable

All specification values are typical unless otherwise stated. Arcam has a policy of continuous improvement for its products. This means that designs and specifications are subject to change without notice. E&OE.

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

设备代码

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
Klh	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

Acoustic Solutions	002 060
Akura	002 020 026 099 100
Alba	002 016 020 023 027 032 044 058 061 070 118
Antiference	073
Argos	044
Asda	002 099
Astratec	011
Astro	024
Audioline	007
Aurex	002
Black Diamond	002
Boca	024
Bush	002 007 009 011 016 020 023 027 029 030 032 044 052 053 058 062 064 069 073 079 092 098 102 103 112
Comag	024
Crown	002
Currys	062
Curtis	062 099
CYRUS	129
Daewoo	011 109
Digifusion	009 011
Digihome	002 020 073
Digilogic	002 026
Digitalstream	093
Dion	066 089 120
Dreamax	119
Dual	020
Durabrand	002 020 055
Essentials	062
Evesham	020
EZ Box	101
Ferguson	001 012 013 020 026 062 072 073
Fetch TV	086
Finlux	073 100
Freecom	045
Fuba	017
Fusion	009 011
Globo	024
Goodmans	002 011 019 020 023 027 029 030 032 044 058 064 069 070 071 098 102 103
Grundig	001 002 003 004 027 030 044 058 059 064 069 070 074 075 084 098
Hirschmann	024
Hitachi	002 020 082
Humax	012 018 028 035 048 049 050 051 054 108 115 116 117
i-Can	094
Icecrypt	063 090 095
Inverto	021
Kabel Digital	042 057
Kabel Figital	048
Labgear	026 104
Linsar	002 020 065 073 079
Lodas	002
Logik	002 013 020 036 062 065 087 092
Logisat	024
Lowry	073 085
Luxor	020 073 079
Manhattan	070 076
Maplin	020
Matsui	002 011 061
Medion	024
Meo	031 081
Metronic	007 046 047 067 068 072 073 076 077 079
Mico	016
Morgans.S.L.	024
Murphy	100
Nichimen	023
Nikkai	085
Onn	002 020
Pace	057 078 125
Pacific	002
Palcom	017
Panasonic	006
Philex	062
Philips	007 014 031 033 034 080 114
Premiere	048 054 057 116
Proline	002 016 020 026 062
Sagecom	056 096
Sagem	008 015 056 105
Samsung	037 038 091 111
Scientific Atlanta	081
SEG	002
Setanta	007
Sharp	020 079 083 088
Sky	048 054 125
Sky-digital	127
Sky HD	130
Sky+	128
Skymaster	017
Sony	010 110
Strong	002
TDC	081
Technika	002 020 058 070 073 086 087
Technomate	039 040 041 126
Technosonic	007
Techwood	002 020 079 100
Telewest	025
Tevion	007 017 023 104
Thomson	003 005 042 043 079 113
Top Up TV	007
Topfield	090
Toshiba	002
Triax	024 083 088
TVOnics	013 036 121 122 123 124
TWF Digital	007
Virgin Media	013 025
Walker	020
Wharfedale	002 020 079
Winix	097
Xenius	073
Yamada	026
Zon	078

Satellite Radio

Brix	555
Delphi	515
Polkaudio	515
Sirius	555
Sony	380
XM Satellite Radio	515

TV

A.R.Systems	160 418
Adl	299
Admiral	058 137 204 245 246
Adyson	159 219
Aeg	031 109 123 249 263 282 286 319 407
Ag	282
Ahb Isions	131
Aiostay	144
Akai	027 036 074 097 103 104 106 108 132 140 155 156 242 243 249 250 251 275 279 280 287 407 409 410
Akita	085
Akura	064 074 086 108 171 174 407 410 429 430 431
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