

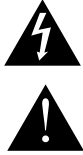
Arcam AVR280 surround sound receiver



English



ARCAM

Safety guidelines



	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	ATTENTION RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR	
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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.

Important safety instructions

This product is designed and manufactured to meet strict quality and safety standards. However, you should be aware of the following installation and operation precautions:

1. Take heed of warnings and instructions

You should read all the safety and operating instructions before operating this appliance. Retain this handbook for future reference and adhere to all warnings in the handbook or on the appliance.

2. Water and moisture

The presence of electricity near water can be dangerous. Do not use the appliance near water – for example next to a bathtub, washbowl, kitchen sink, in a wet basement or near a swimming pool, etc.

3. Object or liquid entry

Take care that objects do not fall and liquids are not spilled into the enclosure through any openings. Liquid filled objects such as vases should not be placed on the equipment.

4. Ventilation

Do not place the equipment on a bed, sofa, rug or similar soft surface, or in an enclosed bookcase or cabinet, since ventilation may be impeded. The unit should be installed in a well-ventilated area.

5. Heat

Locate the appliance away from naked flames or heat producing equipment such as radiators, stoves or other appliances (including other amplifiers) that produce heat.

6. Climate

The appliance has been designed for use in moderate climates.

7. Racks and stands

Only use a rack or stand that is recommended for use with audio equipment. If the equipment is on a portable rack it should be moved with great care, to avoid overturning the combination.

8. Cleaning

Unplug the unit from the mains supply before cleaning.

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

We do not advise the use of furniture cleaning sprays or polishes as they can cause indelible white marks if the unit is subsequently wiped with a damp cloth.

9. Power sources

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

Warning: This is a Class I device and **must** be earthed.

Warning: The mains plug is used as the disconnect device from the mains supply and shall remain readily operable.

10. Power-cord protection

Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, and the point where they exit from the appliance.

11. Grounding

Ensure that the grounding means of the appliance is not defeated.

12. Power lines

Locate any outdoor antenna/aerial away from power lines.

13. Non-use periods

If the unit has a stand-by function, a small amount of current will continue to flow into the equipment in this mode. Unplug the power cord of the appliance from the outlet if left unused for a long period of time.

14. Abnormal smell

If an abnormal smell or smoke is detected from the appliance, turn the power off immediately and unplug the unit from the wall outlet. Contact your dealer immediately.

15. Servicing

You should not attempt to service the appliance beyond that described in this handbook. All other servicing should be referred to qualified service personnel.

16. Damage requiring service

The appliance 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 appliance, or
- C. the appliance has been exposed to rain, or
- D. the appliance does not appear to operate normally or exhibits a marked change in performance, or
- E. the appliance has been dropped or the enclosure damaged.

17. Speaker connections

Any speakers must be connected to the AVR280 using Class 2 wire (i.e., no connection to earth should be made). Failure to observe this precaution may cause the unit to be damaged.

Safety compliance

This product has been designed to meet the IEC 60065 international electrical safety standard.

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The small print:

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Before you start!

Introduction

The AVR280 is a high quality and high performance home cinema processor and multi-channel audio amplifier built to Arcam's traditional high quality design and manufacturing standards. It combines high resolution digital processing with high performance audio and video components to bring you an unrivalled home entertainment centre.

In addition to the built-in tuner, the AVR280 allows switching and volume control of seven analogue and six digital sources, making it an ideal companion for both home cinema and two-channel stereo systems. Since many of these source components are also capable of outputting high quality video signals, the AVR280 includes broadcast quality video switching for composite, S-video, component, RGB- and HDMI-video signals. There are inputs and outputs for both tape and VCR, as well as a digital output. DVD-Audio or SACD can be connected via the multi-channel input. Control of the AVR280 is either by front panel control buttons, IR remote control or an RS232 port (which also can be used to upload future software enhancements).

As well as providing the audio and video being used in the main listening area, the AVR280 allows the same, or a different, source to be routed to a second area (called 'Zone 2'), such as the kitchen, bedroom, lounge, etc. Zone 2 can have full remote control over the source selection and volume in that area.

The customised installation of the AVR280 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.

Using this handbook

Thank you for purchasing the Arcam AVR280 Surround Sound Receiver.

This handbook has been designed to give you all the information you need to install, connect, set up and use the Arcam AVR280 Surround Sound Receiver. The remote control handset supplied with the equipment is also described.

It may be that the AVR280 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 the unit and move directly to the section detailing the operation of your unit.

Safety

Safety guidelines are set out on page 2 of this handbook.

Many of these items are common sense precautions but, for your own safety, and to ensure that you do not damage the unit, we recommend that you read them.

This is a class 1 product and requires an earth connection.

What's in the box?

Please confirm that the following items are in the box when you receive it:

- Arcam AVR280 surround-sound receiver – the model number is shown on the right of the front panel of the player;
- Arcam CR100 remote control with 4 'AAA' batteries – the remote control model number is shown on the front at the bottom of the remote control;
- FM ribbon and AM loop antennae;
- Mains power lead appropriate for the mains supply in your area;
- Product registration card and envelope.

If any of these items are missing or incorrect, please contact your Arcam dealer immediately.

Before making connections

Before connecting your equipment it is important to think about the following points, as these will affect your choice of connections and subsequent use of the system.

Audio

Wherever possible, connect both analogue and digital outputs of digital sources. This enables use of a digital input for the main zone with the corresponding analogue input used for recording onto an analogue tape deck or VCR, or for the Zone 2 output.

Video

The AVR280 allows for conversion between different video formats. This means that the AVR280 can convert between composite, S-video and component, if required.

For example, if you are watching a composite input from a VCR, you may view it from the S-video or Component/RGB video outputs of the AVR280. This allows you to use a single (typically high-quality Component/RGB) connection between the AVR280 and your display device.

However, neither the record loops nor Zone 2 work from the video converter. This means that to record a S-video or composite signal, a S-video or composite signal (respectively) must be supplied; to view video in Zone 2, a composite signal is required.

The video quality hierarchy is as follows:

- Component/RGB – highest
- S-video – middle
- Composite – lowest

If all the video inputs are connected simultaneously from one device, e.g., a DVD player, the AVR280 will select automatically the best format available.

Digital video (HDMI)

The AVR280 is fitted with two HDMI inputs and one HDMI output, allowing switching of HDMI signals. In most cases, HDMI provides the highest quality video connection between your source and your display. The AVR280 does not perform conversion between analogue audio/video and HDMI.

HDMI signals cannot be routed to Zone 2. If you are using an HDMI connection and you wish to have the same audio and video in Zone 2, then you will need additionally to provide analogue audio and video connections (as described above).

Zone 2

A line-level signal from the stereo analogue audio together with the composite video inputs are available for Zone 2. The analogue inputs from source components are required because the AVR280 provides no analogue-to-digital, DSP processing or digital-to-analogue conversion; the composite video connections are required since the AVR280 does not perform video format conversion for Zone 2.

For these reasons, we recommend that source devices that have a digital connection are also connected to the analogue inputs. High quality YUV/RGB and S-video sources should also have their composite outputs connected to the AVR280 for use in Zone 2.



HDMI (High Definition Multimedia Interface) supports both video and audio on a single digital connection for use with DVD players, digital TV, set-top boxes, etc. HDMI was developed to combine the technologies of High-bandwidth Digital Content Protection (HDCP) and the Digital Visual Interface (DVI) in one specification, with the addition of transmission of digital audio information; HDCP is used to protect digital content transmitted to DVI-compliant displays.



Using the remote control

The remote control requires four 'AAA' batteries to operate. To insert the batteries into the remote control, please follow the instructions in the side panel diagram:

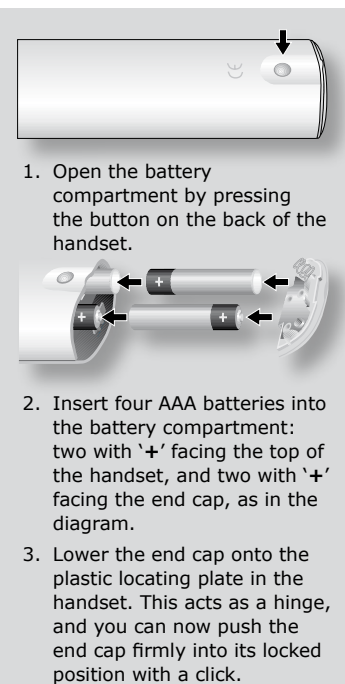
Notes on inserting the remote control batteries

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

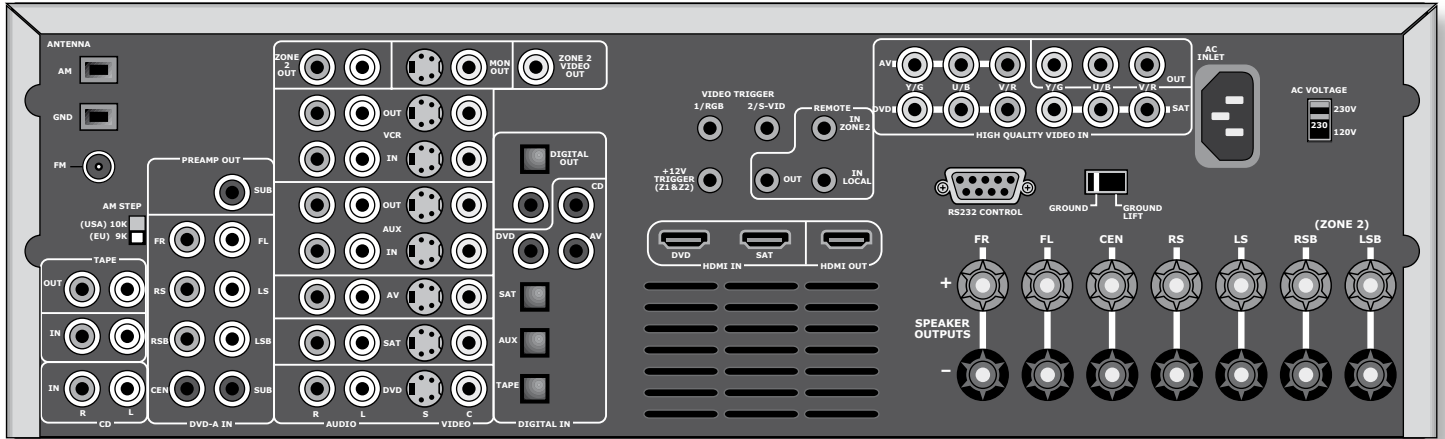
Reliable use

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

- Ensure that there are no obstacles between the remote control and the remote sensor on the AVR280. The remote has a range of about 7 metres. (If the remote sensor is obscured, the remote control input jack on the rear panel is available. Please contact your dealer for further information.)
- Remote operation may become unreliable if strong sunlight or fluorescent light is shining on the remote sensor of the AVR280.
- Replace the batteries when you notice a reduction in the operating range of the remote control.



Installation



The AVR280 rear panel

Positioning the unit

- Place the receiver on a level, firm surface.
- Avoid placing the unit in direct sunlight or near sources of heat or damp.
- Do not place the unit on top of a power amplifier or other source of heat.
- Ensure adequate ventilation. Do not place the unit in an enclosed space such as a bookcase or closed cabinet unless there is good provision for ventilation. The receiver is designed to run warm during normal operation.
- Make sure the IR receiver in the centre of the front panel display is unobstructed, otherwise this will impair the use of the remote control. If line-of-sight is impractical, an infrared remote repeater can be used with the rear panel IR connector.
- Do not place your record deck on top of this unit or any other unit which is mains supplied. Record decks are very sensitive to the noise generated by mains power supplies which will be heard as 'hum' if the record deck is too close.

IMPORTANT: Do not place any other component or item on top of the AVR280 as this may obstruct the ventilation holes, causing the AVR280 to run hot. (The unit placed on top of the AVR280 would become hot, too.)

Notes on installing the AVR280

The inputs are named to make it easier to reference when connecting source components to the AVR280 (e.g., a DVD or VCR), but all inputs have the same circuitry. This means that there is no reason why you should not connect a different device from that labelled to any of the inputs. For example, if you had two DVD players and the AV input was not being used, then the second DVD player could be connected to the AV input.

Cables

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

Video and digital connections must be made with cables that are designed for this purpose, i.e., coaxial cable with a 75Ω impedance. If substandard cables are used you may suffer from poor picture quality such as ghost images and/or grainy picture quality (snow).

Speaker cables should be kept short to ensure efficient power transmission and avoid audible distortion.

It is good practice when connecting your equipment to ensure that the mains power supply cabling is kept as far away as possible from your audio and video cables, as this will provide the best sound and picture quality. Failure to do so may result in unwanted noise in the audio and video signals.

Audio connections

- Wherever possible, connect both the analogue and digital outputs of digital sources. This enables use of a digital input for the main zone and the corresponding analogue input for recording onto an analogue tape deck or VCR, and for the Zone 2 output if used.
- Take care to place the audio cables as far from any power supply cabling as is practically possible to reduce hum and other noise problems.

Analogue audio connections

STEREO INPUTS

② VCR, ④ AUX, ⑤ AV, ⑥ SAT, ⑦ DVD, ⑰ TAPE IN, ⑱ CD.

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

Connection of record decks:

The AVR280 is not fitted with a phono pre-amplifier. If you wish to connect a record deck to the AVR280, then you will need an external pre-amplifier. Please contact your dealer for further information and recommendations on the best option for your system.

MULTI-CHANNEL DVD-A/SACD INPUTS

⑧ RIGHT, ⑨ LEFT, ⑩ RIGHT SURROUND, ⑪ LEFT SURROUND, ⑭ CENTRE, ⑮ SUB.

Connect the audio outputs of your DVD-Audio or SACD player to these input sockets.

⑫ RS BACK, and ⑬ LS BACK.

These are available for formats requiring eight channels. Currently no formats are available requiring these connections, which are provided for future compatibility.

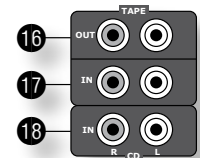
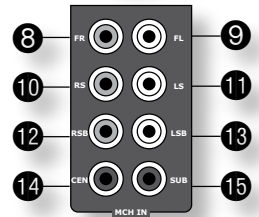
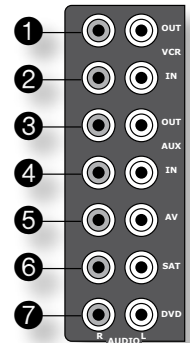
The multi-channel input is intended for use with sources that decode the surround channels internally, such as DVD-A or SACD players.

The AVR280 switches these analogue inputs directly to the analogue outputs via its own volume control circuit. This direct path maintains the best possible sound quality for DVD-A and SACD sources; it has the side-effect that there is no bass-management for DVD-A or SACD players. In this case, the bass-management functionality of the player itself should be used.

STEREO OUTPUTS

① VCR OUT, ③ AUX OUT, ⑯ TAPE OUT.

Connect the left and right audio outputs sockets to the left and right input sockets of your cassette deck, VCR or AUX (usually labelled 'RECORD IN'). The VCR/AUX connections may also be used for a second or third cassette deck.



Digital audio connections

INPUTS

⑲ CD, ⑳ DVD, ㉓ AV, ㉔ SAT, ㉕ AUX, ㉖ TAPE.

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

If required, each of these six digital inputs can be allocated to a different audio input from that indicated by the input label, through the 'Digital Settings' page of the Set-up menu. This means that, for example, if you wish to use an optical connection for your DVD player, the optical connection for the SAT, AUX, or TAPE can be used and the audio from that digital input assigned to the DVD button.

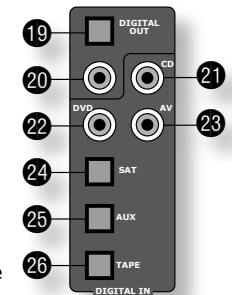
OUTPUTS

⑲ ⑳ DIGITAL OUT.

Two digital output connections are available: optical and coaxial. The two connections carry the same information at all times and both may be used simultaneously. Connect the digital outputs to your digital recording devices such as a CD-R, digital VCR or MiniDisc player.

When a digital source is selected, the digital output will send an exact copy of the incoming digital signal. For example, for a 5.1 digital source, the digital output will also be in 5.1 format.

When an analogue source is selected, the digital output will be muted. These outputs are also muted if a source is selected where the only connection for that source is HDMI. The digital audio from the HDMI link (if any) is not routed to these outputs.



Analogue pre-amplifier output

㉗ SUB. Subwoofer output. Connect this output to the input of your active subwoofer, if you have one.



Video connections

The AVR280 allows for conversion between different video formats. This means that the AVR280 can convert between composite, S-video and component, if required. For example, if you are watching a composite input from a VCR, you may view it from the S-video or Component/RGB video outputs of the AVR280. This allows you to use a single (typically high-quality Component/RGB) connection between the AVR280 and your display device.

The record loops do **not** work from the video converter. This means that to record a S-video or composite signal, a S-video or composite signal (respectively) must be supplied.

The following video conversions are possible:

To:\nFrom:	Composite	S-video	Component/\nRGB
Composite	Yes	Yes	Yes
S-video	Yes	Yes	Yes
Component/\nRGB	No	No	Yes

Note that conversion between RGB and Component video (or vice-versa) is not supported by the AVR280.

Composite/S-video video connections

32 33 MONITOR OUT.

Two video output connectors are provided, one for S-Video and one for composite video. The outputs carry the same information at all times (and both may be used simultaneously, if required). Connect one of these outputs to the video input of your display device.

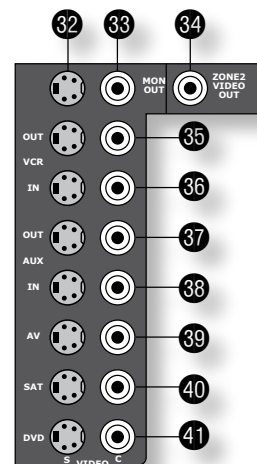
36 VCR IN, 38 AUX IN, 39 AV, 40 SAT, 41 DVD.

Connect the composite video outputs of your source equipment to these inputs. The choice of connection to use (S-video or composite) depends on where the signal is to be routed to: if the signal is to be used in Zone 2, then a composite connection is required; if the signal is to be used for recording (routed to a VCR, for example), then the connection type must match the connection to the recording device (i.e., if the recording device requires a S-video signal, then a S-video connection from the source equipment must be used).

If both connections are made, the signal from the S-video input will be used for the main zone if no Component/RGB signal is supplied.

35 VCR OUT, 37 AUX OUT.

Connect one of the S-video or composite video outputs to the video input of your VCR or AUX. The connection used must match the video type of the source you wish to record (as described above). For example: if you wish to record a S-video signal from your satellite receiver on your VCR, the connection to the VCR must also use S-video.



High quality (Component) video connections

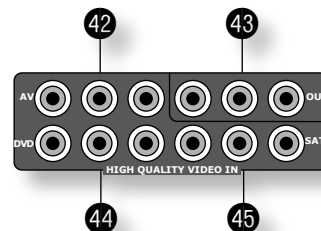
These inputs are suitable for connection to component (YUV/YCrCb) or RGB outputs. These signals are usually available from a DVD player, set-top box or games console and offer the best possible picture quality.

Note that the high-quality component video connections operate independently of the composite/S-video connections.

Generally, the component video standard is used in North America/NTSC regions, while RGB is used in Europe.

42 AV, 44 DVD, 45 SAT INPUTS. Connect the video outputs of your high-quality video sources to these inputs.

43 HIGH QUALITY VIDEO OUT. Connect these sockets to the component video inputs of your display device.



Important notes about HQ-video inputs and outputs

- In the 'Video Settings' set-up menu, each of these three high-quality component video inputs can be allocated individually to any of the other inputs, e.g., the input labelled 'DVD' does not have to be used for DVD, but can be used for something else. See page 14 for further details.
- You cannot mix component and RGB sources. Selection of component or RGB can be made in the Set-up menu 'General Settings' page (see page 10).
- The high-quality component video inputs have sufficient bandwidth for line-doubled NTSC (525/60) or PAL (625/50) video ('progressive scan') and also US HDTV video signals. However, when used with such signals the OSD is not overlaid on the picture but is output at standard interlaced NTSC or PAL (525 or 625 line) rate on a solid background.
- When using the HQ-video inputs, the composite and S-video outputs will be muted. This is because the processing for the on-screen display would create invalid video signals on these outputs.

! When you connect your devices to these connectors, take care to follow the letter/colour coding for each input. No damage will occur if connected incorrectly, but unusually coloured or unstable pictures will result.

SCART RGB 4-WIRE CONNECTION

(SCART refers to the multipole A/V connector used commonly on European A/V equipment.)

Some video projectors and most European TV sets require the use of a 4-wire RGB connection, where the 'sync' signal is separate from RGB. In this case, you need to use the composite video **MONITOR OUT** 33 for the sync information. A cable is available from your dealer to make this 4-wire RGB connection (refer to the table of SCART connections at the back of the manual). Note that use of this feature requires (in addition to the RGB connections) a composite video connection between the source and the AVR280, in order to supply the additional synchronisation signal.

Note that most SCART TV inputs will require the SCART RGB status line to be controlled before the RGB signal will be displayed. The RGB trigger output will control this signal when connected to the SCART socket using a cable of the type given on page 32. These cables are available from your dealer.

The AVR280 does not support either 5-wire RGB HV or 3-wire RGB sync-on-green connections.

HDMI

An HDMI connection between a source and your display device offers the best possible picture quality. This connection type is, however, the most limiting in terms of routing, advised cable length and conversion.

The AVR280 provides two HDMI inputs; these are labelled 'DVD' and 'SAT' in anticipation of the most common use for these connectors, but they may be used for any HDMI source. These inputs may be configured to be associated with any of the other sources, so that selecting that source ('AUX', for example), selects one of the HDMI inputs instead of the usual input associated with that source.

It is important to realise that analogue video sources cannot be routed by the AVR280 to the HDMI output, nor can either of the HDMI inputs be converted to analogue video (of any sort). The AVR280 acts simply as a switching device, selecting one of the inputs and routing it to the output.

Keeping the above in mind, it will be necessary (as with the high-quality analogue video connections), to provide a composite video feed, in addition to the HDMI connection, if the video is to be routed to Zone 2.



Connecting loudspeakers

The red and black terminals on the back of the AVR280 are used to make the connections to the loudspeakers. The speakers should be connected to the loudspeaker terminals, referring to the labels on the rear-panel.

When connecting the speaker terminals of the amplifier with the terminals on the speakers make sure that like polarities are matched (i.e., match '+' with '+' (usually red) and '-' with '-' (usually black)). Mismatching of polarities will result in a weak central sound, unclear orientation of the instruments and the sense of direction of the stereo being impaired.

There are two options for connecting the speaker cable to the amplifier:


Using bare wire ended leads:

1. Strip back the insulation on the wire to reveal about 2cm of conductor (the metal inside the cable).
2. If the conductor is stranded, twist the strands together tightly to avoid loose strands making contact with the adjacent terminals or the back panel.
3. Loosen the terminal by turning it anti-clockwise
4. Insert the twisted wire through the hole in the terminal.
5. Tighten by turning clockwise.

When making connections with stranded bare ended wires, take great care that no individual strands of wire come into contact with the adjacent terminals or with the back panel. If this should happen, it will cause a short circuit on the output of the amplifier and could damage the amplifier.

Using spade terminals:

1. Loosen the terminal by turning it anti-clockwise
2. Insert the spade connector under the terminal.
3. Tighten by turning clockwise.

 The speaker connectors on the rear-panel are labelled as follows:

FL - Front Left
FR - Front Right
CEN - Centre
RS - Right Surround
LS - Left Surround
RSB - Right Surround Back
LSB - Left Surround Back

Zone 2 connections

The AVR280 allows independent routing and control of analogue audio and composite video to a second room such as a kitchen, bedroom or lounge. This second room is known as 'Zone 2'.

For Zone 2, the AVR280 outputs a line-level audio signal taken from the stereo analogue audio, and a composite video signal taken from the composite video input (for a given source). The analogue inputs are required because there is no analogue-to-digital, DSP processing or digital-to-analogue conversion available for Zone 2 signals. As the AVR280 does not convert video formats for Zone 2, a composite video signal must also be connected from the source.

For these reasons, we recommend that source devices that have a digital connection are also connected via the analogue inputs. High quality YUV/RGB and S-video sources should also have their composite video outputs connected to the AVR280 for use in Zone 2.

NOTE: As a composite input is required for Zone 2, it may not be possible to run your DVD player in progressive scan mode and to use Zone 2 at the same time, unless your DVD player can output both progressive scan and composite signals simultaneously.

46 ZONE 2 OUT.

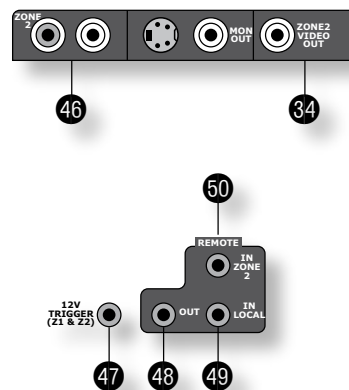
This is the audio output for Zone 2. Connect these to a line level input on your Zone 2 amplifier.

34 ZONE 2 VIDEO OUT (Composite video connection).

This is the video output for Zone 2. Connect to your Zone 2 video display using 75Ω low loss coaxial cable.

50 IN ZONE 2.

This allows the AVR280 to be controlled remotely from Zone 2 via infrared remote control. See the panel for connection information.



Zone 2 remote controller connection.

A receiver compatible with this connector 50 is available from Xantech (part no. 291-10). Please contact a Xantech registered dealer for this part, as ARCAM does not stock them. See www.xantech.com for more information. The 3.5mm jack plug for this connector is wired as follows:

3.5mm stereo jack	Function
Tip	Signal
Ring	0V
Sleeve	12V, 30mA current-limited

This follows the Xantech standard for IR transmission over wire.

Connecting the AM and FM antennas

FM antenna

An FM antenna is required to receive VHF radio signals.

Although a FM ribbon antenna is supplied as an accessory to the AVR280, for optimal FM radio reception a roof- or loft-mounted aerial is advised as this will give superior reception. (It is recommended that any roof-top antenna is fitted by an experienced contractor as a contractor will be able to align your antenna to the nearest FM transmitter.)

In some areas cable radio may be available or, in an apartment building, a distributed antenna system may be installed. In either of these cases you should have sockets in your home marked FM or VHF (do not use those marked TV), which should be connected to the FM in socket 57 of the AVR280.

If you wish to use the supplied FM ribbon cable, mount this as high up as possible on a wall with the 'T'-elements positioned horizontally. 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 (note that no tacks should come into contact with the internal wire of the aerial). When assembled (see box, right), the plug on the ribbon cable should be connected to the FM in socket 57 of the AVR280.

Connecting the plug to the FM ribbon cable:
 1) loosen the two screws on the plug;
 2) insert the spade connectors of the ribbon cable under the screws;
 3) re-tighten the screws onto the connectors.

AM antenna

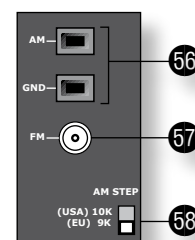
An AM antenna is required to receive AM/medium wave radio signals.

An AM loop antenna is supplied as an accessory with the AVR280. This should be attached to the AM antenna inputs 56 with one end connected to AM and the other to Ground (it does not matter which way round this antenna is fitted). Rotate the antenna to discover which position gives the best reception.

In areas of weak reception, or when the AVR280 is in use inside a steel framed building (such as an apartment building), you can use a wire between 3 and 5 metres long to strengthen reception. Mount this high up outside the building (if possible) and connect one end of this wire to the AM antenna input **in addition to** the loop aerial supplied (do not disconnect the AM loop antenna).

AM STEP SIZE

The AM tuning 'step size' needs to be set according to your location. This is done using the switch on the rear panel 58: set it to 10kHz if you are in North America or 9kHz anywhere else. Note that this should be set correctly even if you do not intend to use AM reception as it also alters some FM tuner settings for use in North America.



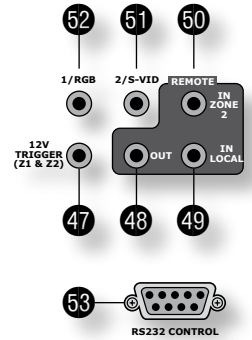
Control connections

48 (REMOTE) OUT. This outputs any remote control signal that is received by one of the two remote control inputs described below (but not signals received from the front-panel). It allows remote control of source components; control is possible by either connecting this output to the devices to be controlled via the 3.5mm IR jack socket (Arcam units only) or by using an IR emitter stuck to the centre of the IR sensor window on the source component (such as a Xantech 283MW mini emitter).

49 IN LOCAL. Use with a local IR receiver when the AVR280 front panel IR receiver is obstructed.

50 IN ZONE 2. This allows the AVR280 to be controlled remotely from Zone 2 via infrared remote control (see section 'Zone 2 connections' above for further details).

53 RS232 CONTROL Use with control devices having an RS232 serial port (for example, Crestron and AMX touch screen controllers). This connection is also used for upgrading control software. See the sections at the end of this manual for control and programming information.



Trigger outputs

There are three trigger output sockets on the AVR280, each of which is a 3.5mm stereo jack with two contacts, 'tip' and 'ring'. See the tables for technical information on the trigger outputs.

47 12V TRIGGER. This can be used for turning on and off automatically power amps or source equipment for the main zone and Zone 2. The trigger lead is wired as shown in the panel.

52 VIDEO TRIGGER 1, 51 VIDEO TRIGGER 2. These trigger outputs have different functions depending on how the 'Video Status' has been set in the 'General Settings' menu. See page 10 for full details.

Connection	Function	Voltage
Tip	Main zone on	On = 12V, 30mA Off = 0V
Ring	Zone 2 on	On = 12V, 30mA Off = 0V
Sleeve	Ground	0V

Connecting to a power supply

54 POWER INLET. The AVR280 has a dual voltage power supply that can be switched between 120V and 230V AC. As supplied, this switch should be set correctly for your local supply.

55 GROUND LIFT switch. In complex set-ups that include satellite inputs or radio antennas, grounding the unit may increase the level of background hum or buzz in the loudspeakers. If this occurs, set the **GROUND LIFT** switch to lift the signal ground from the chassis ground.

DO NOT REMOVE the safety earth from the mains cable under any circumstances.

Mains lead

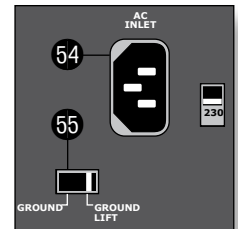
The appliance is normally supplied with a moulded mains plug already fitted to the lead. Check that the plug supplied with the unit fits your supply. If your mains plug is different, consult your Arcam dealer.

If for any reason the plug needs to be removed, it must be disposed of immediately and securely, as it is a potential shock hazard when inserted into the mains socket. Should you require a new mains lead, contact your Arcam dealer.

Plugging in

Push the plug (IEC line socket) of the power cable supplied with the unit into the power input socket (**54**) in the back of the unit. Make sure it is pushed in firmly.

Put the plug on the other end of the cable into your power supply socket and switch the socket on.



Configuring the AVR280

The AVR280 'Set-up Menu' has six 'Basic' and five 'Advanced' menu screens that take you through the configuration process. The 'Basic' menus enable you to match your AVR280 to your speakers; the 'Advanced' menus allow you to optimise the operation of your system. Screen shots of these menus are shown in shaded boxes on the following pages.

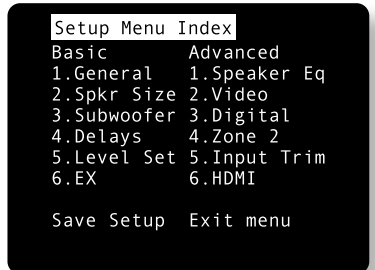
The best way to set up the AVR280 is using the on-screen display (OSD). To view the OSD for the initial set up, use the composite video output to connect to your TV. This is because the high quality video output has several display modes and may be incompatible with your high quality display device in its default configuration. Note that no on-screen display is available over the HDMI connection.

Set-up mode

To enter the Set-up menus press and hold the **MENU** button on the remote control or on the front panel, for at least two seconds. The 'Set-up Menu Index' is displayed on your display device.

Set-up Menu Index

The Set-up menu index page is the first page that is displayed when the Set-up menu is entered. This page allows you access to the six 'Basic' and five 'Advanced' menus.










Setup Menu Index	
Basic	Advanced
1. General	1. Speaker Eq
2. Spkr Size	2. Video
3. Subwoofer	3. Digital
4. Delays	4. Zone 2
5. Level Set	5. Input Trim
6. EX	6. HDMI
Save Setup	Exit menu



Navigating the Set-up menu

... BY USING THE REMOTE CONTROL

The Set-up 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 Set-up menu, press and hold the **MENU** button (which is located immediately under the navigation buttons) for at least two seconds, until the Index page appears. (Pressing the menu button for just a short time will take you to 'Main Menu Screen 1'. If this happens, the Main Menu can be closed by pressing **MENU** for a second time.)
2. When the menu heading is highlighted, using the  and  keys will navigate between menu pages. Using this method to navigate between pages the first time the unit is being configured will help to ensure that no pages are missed out.
3. Use the  and  keys to navigate up and down the menu lines.
4. To change the setting for a particular menu item, highlight the item then use the   keys to cycle through the options for that item.
5. Once you have set all the menu items on a page to have values that are appropriate for your system, move the menu highlight to the top of the screen (the menu heading) and press  to move to the next menu page.
6. At any time, press the **MENU** button to return to the main Set-up menu index screen.
7. To save the changes you have made, return to the Set-up menu index page and highlight the 'Save Set-up' item at the bottom of the screen. Press the **OK** button to save the settings. Press **OK** again to exit the Set-up menu.



In addition to the above method of moving from page to page using the   keys, each menu page can be accessed directly from the Set-up menu index page. This is achieved by using the cursor keys to move the menu highlight to the desired page on the Index page, then pressing **OK**.

... BY USING THE BUTTONS ON THE FRONT PANEL OF THE AVR280

The AVR280 front panel controls can be used to configure the options. Follow the instructions given for using the remote control, in this case using the **EFFECT/▼** button for 'down', the **MODE/▲** button for 'up' and the volume control for left and right.

The 'Basic' Set-up Menus

1 – General Settings:

Max Volume: This limits the maximum volume setting the system can be turned up to. This is a useful feature to prevent accidental overdriving of low power-handling speakers, for example.

Max On Volume: Limits the maximum volume the system operates at when it is first switched on. The system comes on at the 'Max On Volume' if the last used (possibly very loud) volume exceeds this value.

Delay units: Controls whether the delay settings for the speakers in surround modes are specified in Imperial or Metric measurements from the listening position, or in terms of time. Either enter the time delay to each channel if calculating the delay in milliseconds, or select between Imperial or Metric measurements and allow the AVR280 to calculate the time delay automatically. Imperial is measured in feet and Metric is measured more precisely in 0.1m (10cm) increments (1 foot is approximately 0.3 metres).

Note that changing the units resets all distances/times to zero. It is therefore important to choose the units (Time, Imperial or Metric) before set up.

OSD Mode: Controls how the on-screen display is viewed.

- **MIXED:** the OSD will appear on top of the existing video picture
- **FULL PAGE:** the OSD is displayed in white on a full screen black background. On video signals that have a sync rate of greater than the normal interlaced rate (i.e., progressive scan, frame-scaled video, HDTV) the OSD will automatically go into Full Page mode (black background) so that the control menu can be accessed. Any pop-up displays (such as the volume bar, source selection information, etc) will be switched off.

Note that no on-screen display is available over the HDMI connection.

Video Status: The video status control is intended for use with SCART connections, but may find use for other purposes. It is possible to use a SCART connection between the AVR280 and your television even though the AVR280 does not have a SCART socket; a pin-out for a SCART lead suitable for this purpose is given on page 32. We suggest the 'SQART' cables manufactured by QED (www.qed.co.uk); please ask your dealer for details.

This setting controls the two video triggers 51 52 on the rear panel and is used to inform the AVR280 which type of video connection is present between it and your TV, in order that the AVR280 can set the control lines correctly for SCART connections. Note that if you do not wish to use the video triggers or a SCART connection, then it does not matter which value this item has.

This item has four settings: **Composite**, **S-video**, **RGB** and **Scrn Ctrl**.

Composite: This mode is used to indicate to your TV that composite video is being sent. It uses the trigger labelled **1/RGB** 51 (which should be connected to the RGB SCART input on your TV), as shown. Select this option if you are using the composite video output of the AVR280. The **2/S-VIDEO** trigger is not active in this mode.

S-Video: This mode is used to indicate to your TV that S-video is being sent. It uses the trigger labelled **2/S-VIDEO** 52, as shown. Select this option if you are using the S-video output of the AVR280. Note that, if this option is selected, the connection labelled 'S-video SCART' (or similar) must be used on the TV, as not all SCART connectors are wired for S-video. The **1/RGB** trigger is not active in this mode.

RGB: This mode is used to indicate to your TV that RGB video is being sent. It uses the trigger labelled **1/RGB**, as shown. Select this option if you are using the RGB output of the AVR280. If this option is selected, the connection labelled 'RGB SCART' (or similar) must be used on the TV, as not all SCART connectors are wired for RGB. The **2/S-VIDEO** trigger is not active in this mode.

Scrn Ctrl: The two video triggers on the rear panel have the same signal for all outputs. This will be +12V when any video source is selected, otherwise 0V. This can be used (for example) to unfurl projector screens automatically when a video source is selected.

1. General Settings

```
Max Volume:      100
Max On Volume:   80

Delay Units:     Metric
OSD Mode:       Full Page
Video Status:   Scrn Ctrl
HQ Video:       YUV
```

English

1/RGB trigger output with COMPOSITE selected:

Connector	Function	Voltage
Tip	RGB mode select	0V
Ring	RGB/composite SCART input select (CVBS status) Aspect ratio 4:3/16:9	Video present, aspect 4:3 = 12V Video present, aspect 16:9 = 6V No video signal = 0V
Sleeve	Ground	0V

2/S-VIDEO trigger output with S-VIDEO selected:

Connector	Function	Voltage
Tip	Video source trigger	Any video source selected = 12V No video source selected = 0V
Ring	S-video SCART input select (CVBS status) Aspect ratio 4:3/16:9	Aspect 4:3 = 12V Aspect 16:9 = 6V No video signal = 0V
Sleeve	Ground	0V

1/RGB trigger output with RGB selected:

Connector	Function	Voltage
Tip	RGB mode select	RGB video = 1V (into a 75ohm load)
Ring	RGB/composite SCART input select (CVBS status) Aspect ratio 4:3/16:9	Video present, aspect 4:3 = 12V Video present, aspect 16:9 = 6V No video signal = 0V
Sleeve	Ground	0V

1/RGB and 2/S-VIDEO trigger outputs with SCRNL CTRL selected:

Connector	Function	Voltage
Tip	Main zone on trigger	Main zone turned on = 12V Main zone turned off = 0V
Ring	Main zone on trigger	Main zone turned on = 12V Main zone turned off = 0V
Sleeve	Ground	0V

HQ Video: Choose between **RGB** or **YUV**; if you have a YUV display, set this item to **YUV**, otherwise set it to **RGB**. Note that this setting has no effect on the HDMI output. This setting controls the routing of the HQ-video within the AVR280, either as 3-wire YUV or 4-wire RGB signals (with the synchronisation signal on composite for RGB). In addition, it controls the operation of the S-video/composite-to-HQ video converter. When set to YUV, incoming composite and S-video signals are converted to YUV; in RGB mode, the incoming signals are converted to RGB, with the synchronisation signal on the composite output.

2 – Speaker Sizes

The size and number of loudspeakers are defined on this page.

Auto Set-up: Allows the setting of 'standard configurations' as in the table below:

Speaker	Config. 1	Config. 2	Config. 3	Custom
Front L/R	Small	Large	Large	Small/Large
Centre	Small	Small	Small	Small/Large/None
Surr L/R	Small	Small	Large	Small/Large/None
Surr Back L/R	Small	Small	Small	Small/None
Sub-woofer	Present	None	Present	Present/None
5.1 Rears	Both	Both	Both	Surr L/R/ Surr Back L/R/ Both

The **Custom** setting allows you to choose any combination of speakers to suit your system. Note that the centre and rear speakers cannot be set to 'large' if the front speakers are set to 'small'.

5.1 Rears defines how the speakers in a full '7.1' installation handle 5.1 decoded sources.

- **SURR L/R** redirects 5.1 surround signal to the surround left and right speakers. No signal will be directed to the surround back left or right speakers.
- **SURR BACK L/R** redirects 5.1 surround signal to the surround back left and right speakers. No signal will be directed to the surround left or right speakers.
- **BOTH** redirects the 5.1 surround signal to both pairs of speakers with the signal to each set reduced by 3dB.

A note on speaker sizes:

A **Large** speaker is one that is capable of handling a full range signal (i.e., 20Hz–20kHz).

A **Small** speaker is one that is not capable of reproducing a deep bass signal (i.e., below 100Hz), for example a satellite speaker.

None indicates that there is no speaker connected to that channel.

2. Speaker Sizes

```
Auto Setup:   Config1
Front L/R:    Small
Centre:       Small
Surr. L/R:    Small
Surr. Back L/R: Small
Subwoofer:    Present

5.1 Rears:   Both
```

3 – Subwoofer Settings

If no subwoofer was selected in the previous speaker menus then some of the items on this page will not be adjustable.

Cross-over Freq.: This setting defines the frequency at which bass redirection begins. Frequencies below this level are redirected from 'small' speakers to the Fronts or to the subwoofer; frequencies above this level are not redirected. The value for this setting depends on your speakers, environment and taste, and is best determined by experimentation.

The adjustment can be made in increments of 10Hz between 40Hz and 130Hz.

Stereo Mode: Select between Large, Large+Sub or Sat+Sub.

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 sources. Choose the option which gives you the most solid even sounding bass (for best results test with a set-up disc or live program material).

- **LARGE:** Pure stereo information – all audio is sent to the front left and right speakers. Use this setting if you have large front speakers. Note that this option will override the setting configured on the 'Speaker Sizes' menu page.
- **LARGE+SUB:** Pure stereo is fed to left and right 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 have 'Small' satellite left and right speakers. Full bass management is used in analogue stereo so that analogue sources are fed to the DSP where the bass is filtered off left and right and redirected to the subwoofer.

Note that the above three Stereo Mode settings pass the audio through the DSP, which may degrade the sound quality slightly. This can be avoided for the 'Large' setting by pressing the **DIRECT** button to bypass the DSP processing.

DTS LFE Gain: DTS soundtracks typically have the LFE track recorded 10dB lower than the main audio tracks. It is, therefore, necessary to compensate for this by raising the LFE output level by 10dB, and setting the DTS LFE gain to 'Normal' activates this compensation. Some DTS soundtracks have been recorded with the LFE signal at the same levels as the main audio, however, and therefore require no gain compensation. For these disks set the DTS LFE gain to -10dB.

- **NORMAL:** This increases the LFE signal by 10dB and is the recommended setting for the AVR280.
- **-10DB:** This allows the LFE to pass directly to the output with no gain adjustment.

Unfortunately, there is no rule for determining which discs are recorded using which method. As a general guide, however, it is only early DTS music discs that require the -10dB setting.

3. Subwoofer Settings

```
Stereo Mode:   Sub+Sat
Cross-Over Freq.: 80Hz
Sub Stereo:    ----I 0dB

DTS LFE Gain: 0dB Normal
MCH Sub Level: 0dB Normal
```

Sub Stereo: This setting allows the volume level of the subwoofer to be adjusted for when the subwoofer is being used with 2-channel (stereo) sources. The subwoofer level for stereo music often needs to be set at a lower level than that for cinema use; use this trim setting, with a stereo source, to reduce the subwoofer output in stereo playback to an acceptable level. The level required depends on various factors such as speakers, the types and styles of music to be played and personal taste.

DVD-A Sub Level: This setting allows compensation for subwoofer level gain from external decoders or sources (such as DVD-A players).

When decoding digital inputs, the AVR280 follows the convention for products of this type and sets the subwoofer level 10dB higher than that of the other channels. Source products such as DVD-audio players do not follow this pattern, however, setting the subwoofer level to be the same as the other channels. This means that switching from material that has been decoded by the AVR280 to that decoded externally may mean that the subwoofer sounds very quiet. This setting provides for the removal of that difference by allowing the subwoofer level of the DVD-A (multi-channel) input to be raised by 10dB.

- **NORMAL:** No gain compensation. This allows the DVD-A sub level to pass directly to the output with no gain adjustment.
- **+10DB:** This increases the DVD-A (multi-channel input) sub level by 10dB

If you are using the AVR280 in combination with the multi-channel analogue outputs of an Arcam DVD-A player, then this item should be set to '+10dB'.

4 – Speaker Delay Settings

The relative positioning of speakers within a room may mean that sound from some

speakers arrives at the listener later than sound from others. By altering the delay settings for the different speakers, this difference in arrival time can be reduced or eliminated.

When setting the delay, it should be imagined that the listener is sitting in a circle of the speakers; the delay indicates the distance of the speaker from the listener.

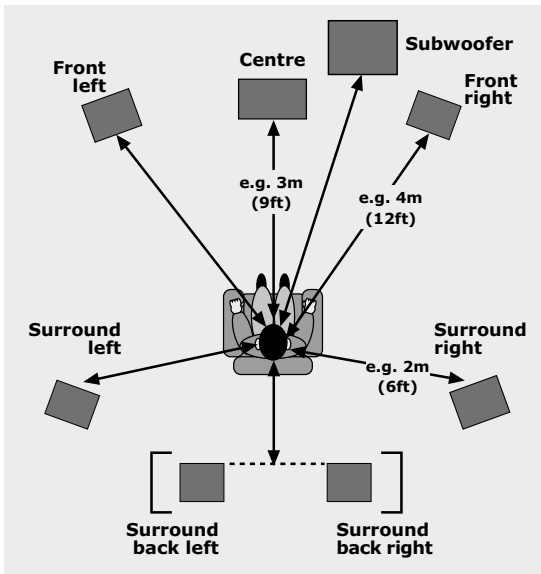
The speaker distance control can be used to set automatically the appropriate time delays required for all the speakers in your system. To use this, measure from the usual listening position to the front of each individual speaker in the system and enter this value in the appropriate place. The measurements can be entered either in feet or metres, as selected from the 'General Settings' menu page.

An alternative to using the speaker distance control is to enter the delays manually in milliseconds.

Note that the delay adjustment is not a substitute for proper speaker placement, but can help to ensure accurate and correct signal arrival times from all the channels to the primary listening position.

No measurement can be entered for a speaker that is not selected in the previous 'Speaker Sizes' menu.

4. Delay Settings	
Front Left:	0.0m
Centre:	0.0m
Front Right:	0.0m
Surr. Right:	0.0m
Surr. Back Right:	0.0m
Surr. Back Left:	0.0m
Surr. Left:	0.0m
Subwoofer:	0.0m



Distance measurements for 5.1 [and 7.1] speaker delay settings

NOTE: Only enter these delay settings once you have specified which delay units (i.e., Time, Imperial or Metric) you will be using. The delay settings will be lost if the units are changed. If the delay units are set to Time, then enter the delay in milliseconds for each channel.

5 – Level settings

The relative sensitivity of different speakers can lead to some speakers sounding disproportionately loud or quiet, relative to others in the system. The level settings of your AVR280 can help to address this imbalance.

It is important to calibrate the speakers correctly to achieve an accurately centred sound stage. If possible, we recommend you use a sound pressure level meter (SPL meter) to perform this part of the set-up as it is difficult to judge the levels accurately by ear alone.

Test Tone Cycle

- **MANUAL** is best for setting up with a SPL meter as the test tone will not change to the next speaker until instructed by you. Pink noise is emitted by the highlighted speaker; when you wish to measure a different speaker, move the highlight to the new speaker.
- **AUTO** is best for setting up by ear. In this state, the test tone changes automatically between speakers after a two second burst of sound.

On first installation, watch the OSD display as you cycle through the available speakers with the test tone. Check that the speaker generating the sound corresponds to that indicated on the OSD. If there is a discrepancy then check and correct the system cabling before proceeding further.

To calibrate the speakers with a SPL meter, place the meter at ear level with the microphone pointing towards the ceiling, when seated in the usual listening position. (You will need to set the meter to 'C', setting with a 'slow' response and to read 75dB SPL at the centre of the scale.) If you do not have a SPL meter, simply set the front left speaker to 0dB on the menu and then match all the other speakers to this level.

Each speaker can be fine-tuned by 1dB increments to ± 10 dB. The output from each speaker needs to be adjusted to the 75dB SPL sound level. No adjustments can be made for a speaker that is not selected in the previous 'Speaker Sizes' menu.

Note that inserting headphones into the front panel of the AVR280 will cause all test-tones to be muted (including the headphone output).

NOTE: If you are using a 6.1 speaker configuration (a single surround back speaker), we recommend connecting the surround back speaker to the surround back left channel of the AVR280.

In this case, the level of the connected surround back channel should be increased by 3dB (i.e., the SPL meter should show a response of 78dB for this channel).

5. Level Settings

```
Test Tone Cycle:Manual
Front L: ---I--- 00dB
Centre: ---I--- 00dB
Front R: ---I--- 00dB
Surr. R: ---I--- 00dB
Surr. BR: ---I--- 00dB
Surr. BL: ---I--- 00dB
Surr. L: ---I--- 00dB
Subwoofer:---I--- 00dB
Select speaker for tone
```

6 – EX Settings

Surr. EX: This can either be set to **AUTO** or **MANUAL** and is applicable only when playing 'Surround EX'-encoded material.

- **AUTO DD EX:** The AVR280 will switch automatically to 'Surround EX' decoding when suitably encoded material is detected (this can be temporarily overridden by pressing the **MODE** button on the remote control).
- **AUTO PLIIX:** The AVR280 will switch automatically to 'Pro Logic IIX Movie' decoding when suitably encoded material is detected (this can be temporarily overridden by pressing the **MODE** button on the remote control).
- **MANUAL:** The AVR280 will not select Surround EX automatically. It can however be selected manually by pressing the **MODE** button.

Use Channels 6+7 for

Choose one from:

- **DOLBY SURR EX:** 'Dolby Surround EX' provides two additional rear channels from 5.1 channel EX-encoded material. This is intended to give better effects steering. In this mode, amplifier channels 6 and 7 are used to drive the EX speakers.
- **ZONE 2:** In this mode, amplifier channels 6 and 7 are used to provide speaker level output for use in Zone 2.
- **BIAMP L+R:** The amplifier channel 6 and 7 are used to provide a second amplified output of the left and right channels. This allows you to bi-amplify your front speakers, which should give an improvement in the sound quality of these channels. If you would like to do this, please refer to page 26 for further information.

NOTE: Changing this setting will require you to change the configuration of the cables connected your speakers.

6. EX Settings

```
Surr. EX:Auto PLIIX Movie
Use Channels 6+7 for:
DD Surr. EX
```


The 'Advanced' Set-up Menus

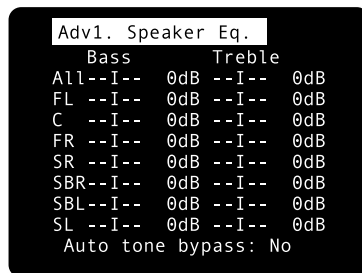
ADV 1 – Speaker Eq.

This allows fine adjustment of bass and treble in 1dB steps (up to ±6dB) for each of the speakers in the system. Use these adjustments sparingly to compensate for speaker response problems caused by positioning, adjacent surface textures, or mixed brands of loudspeakers.

Work with one speaker on at a time and, as an example, use the bass control to reduce boom problems for speakers placed in corners, and the treble control for speakers placed near reflective surfaces. We recommend trying to obtain a good speaker response by speaker placement first, then apply speaker equalisation last.

The tone control nominal corner frequencies are at 100Hz and 8kHz, shelf type.

Auto Stereo Tone Bypass: Set this item to **YES** if, when a stereo input signal is detected (analogue or digital), the tone adjustments set on this page are to be bypassed. (Note that this does not switch the AVR280 into 'Direct' mode, it simply sets the tone controls to zero.)



ADV 2 – Video Settings

This menu allows advanced adjustment of the video settings for your AVR280.

Zone 1 OSD: Selects whether the main zone OSD is on or off.

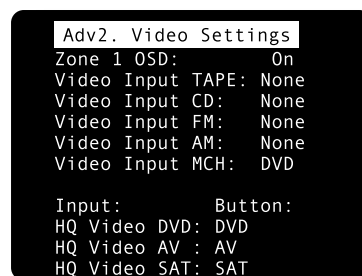
- When set to **ON**, all user adjustments that are made during the general use of the AVR280 are displayed on the screen. This includes the adjustment of the volume control, the inputs selected and the set-up menus.
- When set to **OFF**, there will be no display of the general user adjustments – only the set-up menus and the main menus are displayed.

It is recommended you keep the OSD turned **ON**, since if you cannot see the front panel of the AVR280 you will have no idea if any adjustments you have made to the processor are correct or to your liking.

Video Inputs: Composite and S-video inputs for DVD, Sat, AV, VCR and AUX have their audio and video assigned to track each other by default. The five 'Video Input' lines for Tape, CD, FM, AM and DVD-A allow assignment of a video source to these normally audio-only sources. If desired, it is possible to allocate the same video source to more than one audio input. This facility allows you to listen to an audio source and view a separate video source at the same time – for example, you can listen to radio while watching TV for a sports simulcast.

HQ Video DVD, AV and SAT: Allocate the high quality component or RGB video inputs to any source buttons. For example, to assign the Component/RGB video from the 'HQ Video DVD' input to the **DVD** button, set the 'HQ Video DVD' item in this menu to 'DVD'.

If **HQ-VIDEO** is set to **RGB** (as described on page 13) and an HQ-video input is assigned to a button, the AVR280 assumes that RGB signals are present for that input if a composite signal is found on the corresponding composite input. **If this assignment is made but no RGB signals are supplied, the display will be blank for the assigned source.**

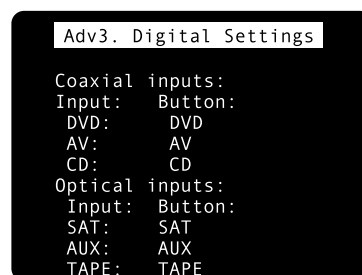


ADV 3 – Digital Settings

Coaxial inputs and Optical inputs. Each of the digital inputs can be assigned to any of the seven stereo source buttons (**CD, TAPE, DVD, SAT, AV, VCR** and **AUX**), or can be assigned **No button**.

This menu page lists the physical inputs, as per the back panel, on the left hand side of the screen, with the buttons used to select the inputs listed on the right hand side.

Each digital input can be allocated only to one source button. For example, if you choose the 'Coaxial DVD input' to be assigned to the **DVD** button, then the choices for the other digital inputs are: **CD, TAPE, SAT, AV, VCR, AUX** and **NO BUTTON**. If you wish to re-allocate the DVD input to a different button, 'Coaxial DVD input' must be assigned to a different button (or **No button**) before you can re-assign the DVD input.



ADV 4 – Zone 2 Settings

ZONE2 VOL: Sets the volume for Zone 2.

Max Vol 20–83: Limits the maximum volume setting for Zone 2. This is a useful feature to prevent accidental overdriving of low power-handling speakers, for example.

Fix Vol: This selects between fixed and variable audio output to Zone 2. If **NO** is selected, the output level can be controlled from Zone 2 or the main system. If you wish to fix the volume level, first set the Zone 2 volume to the desired level, then select **YES**.

Max On Vol: Limits the maximum volume Zone 2 operates at when it is first switched on. Zone 2 comes on at this volume if the last used volume exceeds this value.

Stand-by: This allows zone 1 (the main zone) to be put into stand-by, either locally only or by Zone 2 as well.

- **LOCAL ONLY:** Only the main zone will be switched into stand-by from the main zone.
- **ALL OFF:** Both the main zone and Zone 2 will be switched into stand-by from the main zone.

Access: This acts as a 'parental control' device to disable or enable access to sources for Zone 2.

Press the unwanted source button on the remote control handset or front panel to disable it for Zone 2. Press again to enable the source.

Enabled sources are listed on the 'Access:' line of the menu page.

Adv4. Zone 2 Settings

```
Zone2 Vol:
-----I----- 52dB
Max Vol 20-83: 83
Fix Vol:      No
Max On Vol:   70
Standby:      Local Only

Access:       All
```

ADV 5 – Analogue Settings

Input trims: Allows the adjustment of the input sensitivity of the analogue inputs (in Volts rms) so that each one achieves the optimum dynamic range and sounds similar in loudness to the others.

Available level settings are: **LOW 0.5V**, **MEDIUM 1V**, **REFERENCE 2V**, **HIGH 4V**. The reference level of 2V should be appropriate for most inputs.

If a source is very quiet compared with the other sources you can increase its loudness by selecting the **MEDIUM 1V** or **LOW 0.5V** settings.

Adv5. Analogue Settings

```
DVD:  Ref  2V
SAT:  Ref  2V
AV:   Ref  2V
AUX:  Ref  2V
VCR:  Ref  2V
TAPE: Ref  2V
CD:   Ref  2V
```

ADV 6 – HDMI Settings

The AVR280 provides two HDMI inputs; these are labelled 'DVD' and 'SAT' in anticipation of the most common use for these connectors, but they may be used for any HDMI source. These inputs may be configured to be associated with any of the other sources, so that selecting that source ('AUX', for example), selects one of the HDMI inputs instead of the usual input associated with that source.

NOTE: If the DVD button is assigned to an HDMI input, you will also be able to view the HDMI signal from the DVD player if the **MCH** (DVD-A multi-channel) button is selected.

Adv6. HDMI Settings

```
Input:  Button:
DVD:    DVD
SAT:    SAT
```

Saving Settings and Exit Set-up

You can either save the settings now or exit without saving the changes.

Save Set-up

1. Press **MENU** to go to the 'Set-up Menu Index' at the 'Save Set-up' point.
2. Press **OK** to save.
3. Press **OK** to select 'Exit Set-up' and exit system configuration.

Exit without saving

If you choose to 'Exit Set-up' without first saving the changes, then the new settings will be lost.

1. Press **MENU** to go to the 'Set-up Menu Index' at the 'Save Set-up' point.
2. Press **▶** to select 'Exit Set-up'.
3. Press **OK** when 'Exit Set-up' is selected to exit system configuration.

CR100 Universal remote control

The CR100 is a 'universal' remote that controls the AVR280 and up to seven other devices. The instructions on this page only refer to the control of the Arcam AVR280.

For information on using the remote control for other devices, and a full list of its features, see the Handbook supplied with the CR100.

Device selection

IMPORTANT: Press the 'AMP' button first to operate the AVR280.

On/Stand-by

This allows the AVR280 to be put into and taken out of stand-by remotely.

If you do not wish to put Zone 2 into stand-by at the same time as the main zone, press and hold the stand-by button on the remote control for more than 3 seconds.

TAPE

Selects Tape input for the amplifier

Navigation buttons

Arrow buttons allow navigation around the Basic and Advanced Set-up menus on the AVR280.

Confirm a selection by pressing **OK**.

SHIFT to Power on

SHIFT to Power off

SHIFT to switch Zone 2 on

SHIFT to switch Zone 2 off.

MODE

Cycles through available audio surround modes.

MUTE

Press once to mute the main system. Press again (or use **VOL +/-**) to un-mute.

VOLUME +/-

Adjusts the sound output.

AVR-specific controls

These buttons are described on the next page.

Source selection only

1	DVD input
2	CD player input
3	Television (sound) input
4	Auxiliary (line) input
5	Video Cassette Recorder input
6	Satellite decoder input
7	DAB/FM/AM tuner input

Press the relevant button once to select input.

Source selection and handset configuration

DVD	DVD input/DVD commands
SAT	Satellite decoder input/SAT commands
AV	Television (sound) input/AV commands
TUN	Radio tuner input/TUN commands
AMP	Amplifier. Press first to operate the AVR280
AUX	Auxiliary (line) input/AUX commands
VCR	Video Cassette Recorder input/VCR commands
CD	CD player input/CD commands

Press the relevant button once to select input and reconfigure the handset. Press and hold to select the input without reconfiguring the remote.

MENU

Press to select the OSD Main menu.

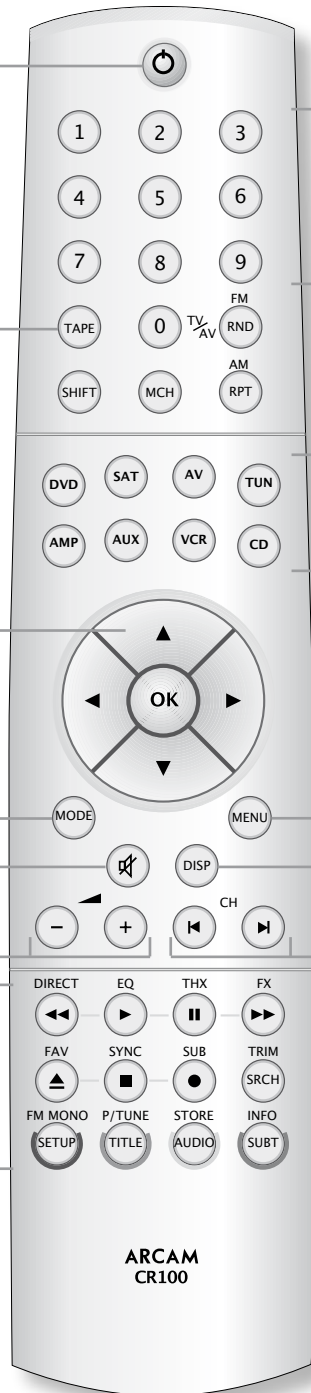
Press and hold for more than three seconds to select the 'Set-up Menu Index'.

DISP (Display)

Press to cycle through Off/Dim/Bright illumination of the front panel display

◀ ▶

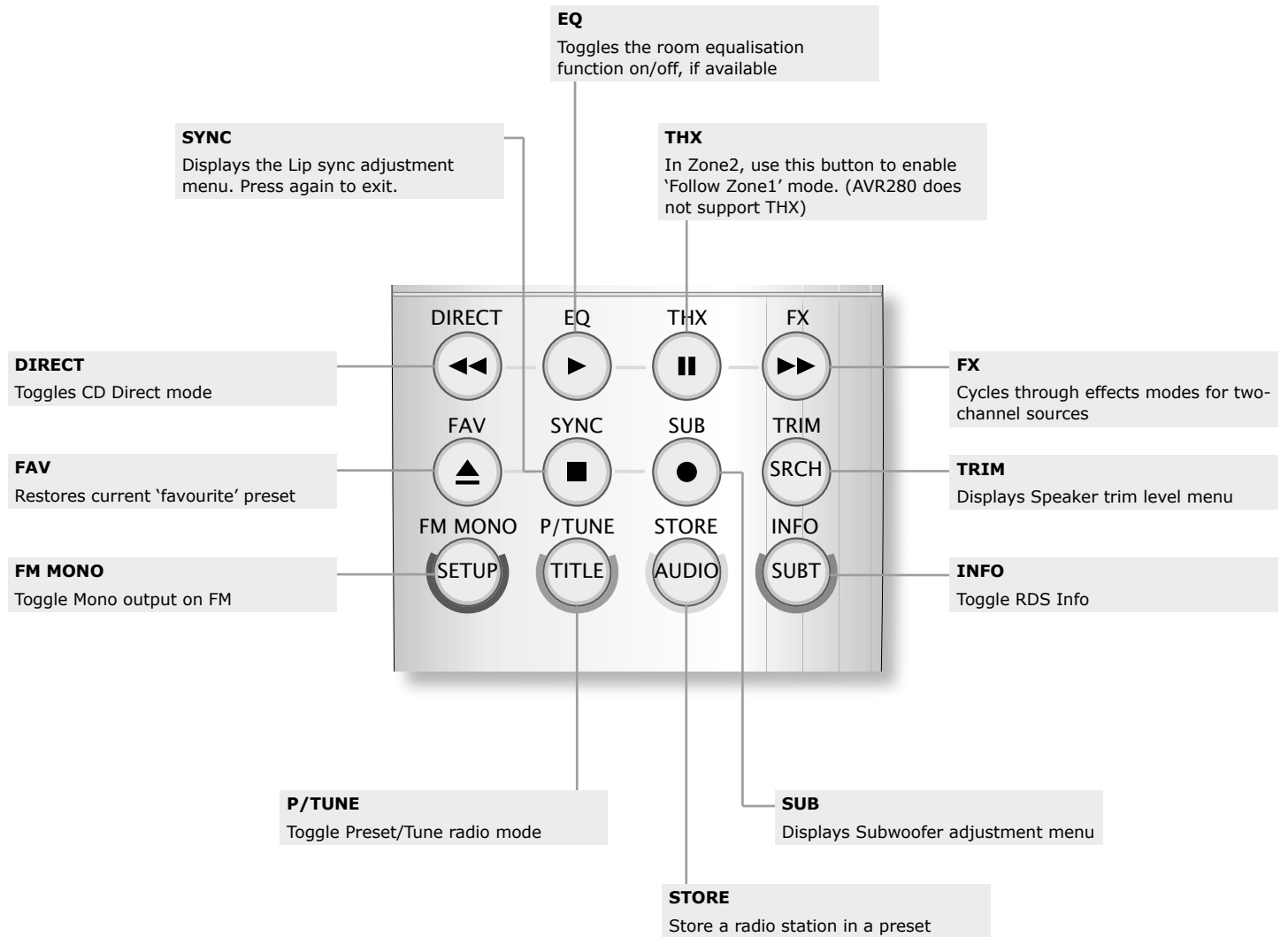
If the tuner is in Preset mode, these buttons give the next Preset radio station down (◀) or up (▶). If the tuner is in Tune mode, these buttons decrease/increase the tuning frequency.



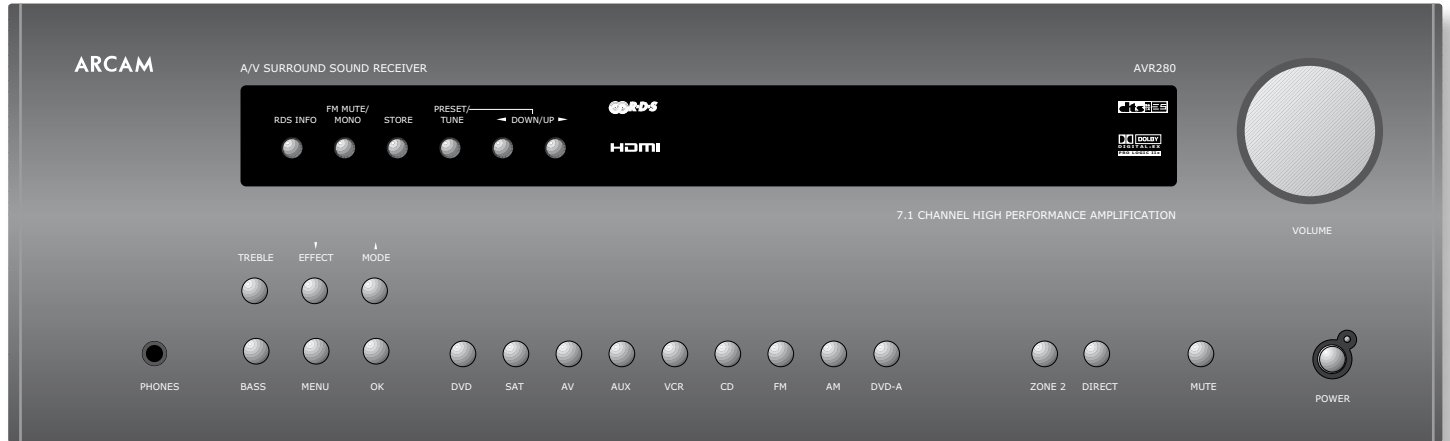
NOTE

Remember to install the four AAA batteries supplied before trying to use your remote control.

AVR specific keys (CR100)



Operating your AVR280



For information display we recommend you use the OSD on your TV/screen whenever possible. However, all key information is also duplicated one line at a time on the front panel display of the AVR280.

Switching on/off

Press the **POWER** button in. After approximately two seconds, the power LED will turn green and the current input and volume level will be shown; after a further 10 seconds, the AVR280 is ready for use. Please wait until the unit has finished initialising before attempting to operate the AVR280. It is recommended that if the unit is switched off, you should wait at least 10 seconds before switching the unit back on.

Stand-by

The AVR280 has a stand-by mode which can be entered by pressing the green stand-by button on the remote control. When in stand-by mode the display is blank and the power LED glows red. If you do not wish to put Zone 2 into stand-by at the same time as the main zone, press and hold the stand-by button on the remote control for about 3 seconds. After this time, the front-panel of the AVR280 will display the text 'Main Off', before going into stand-by; the LED for Zone 2 will be illuminated to show that Zone 2 is still operating.

When not being used, the AVR280 may be left in stand-by mode, as power consumption is low. If you are not using your AVR280 for several days, however, we recommend you switch the unit off completely using the front panel power button.

To switch on from stand-by, press one of the source buttons on the front panel or on the remote control, or use the stand-by button on the remote control.

Volume control

To adjust the volume level of the loudspeakers, pre-amp outputs and headphones use the volume control knob. The volume level is shown on the display. Note that different sources may require different settings of the volume control to achieve the same perceived volume level.

It is important to realise that the value indicated for the volume level is not an accurate indication of the power delivered to your loudspeakers. The AVR280 may deliver its full output power long before the volume control reaches its maximum position, particularly when listening to heavily recorded music. In comparison, some movie soundtracks can appear to be very quiet, as many directors like to keep the maximum levels in reserve for special effect sequences.

The volume can be controlled over a range of 100dB in 1dB steps.

Muting the volume

Pressing the **MUTE** button will mute the output of the AVR280 to the speakers and from the 'pre-amp out' connectors (the output to the record loops remains unaffected). 'MUTE' will be shown on the display while in this state.

Press **MUTE** for a second time (or adjust the volume) to exit the mute state.

Front panel display

In normal operation, the display shows the current volume setting; smaller illuminated areas indicate the audio input type (digital or analogue) and the digital stream type (if applicable). If the processing mode changes (for example, from Dolby Pro Logic decoding to Dolby Digital 5.1), then this will be displayed 'in large letters' for about 2 seconds.

Changing the display brightness (the **DISPLAY** button)

It is possible to select the illumination level of the front panel display. Press **DISPLAY** on the front panel or **DIS** on the remote to cycle through the three illumination levels (Off/Dim/Bright).

Input selection

To select a particular source, press the corresponding button on the front panel or on the remote control. There are eight inputs available: DVD, Sat, AV, AUX, VCR, Tape, CD and MCH (DVD-A multi-channel). In addition, AM and FM radio reception can be selected from the built-in tuner. Any picture signal associated with the selected input is switched to the monitor output.

On selecting a source, the AVR280 will attempt to use the digital input in preference to an analogue input, assuming a digital signal is detected for the source. If you want to override the digital input and select the analogue input instead, however, this can be achieved by pressing and holding the button for the selected source for at least two seconds.

The processing mode and 'Stereo Direct' functions are remembered and recalled for each input. The digital input and high quality video input associated with each source may be configured in the device menus.

The **DVD-A** input is intended for direct analogue pass-through of DVD Audio or SACD surround sources. Apart from volume control and level trim, no processing is performed on this input.

Tape operation

The **TAPE** button selects the audio from a cassette deck connected to the **TAPE IN** phono sockets of the AVR280.

Pressing the **TAPE** button will select audio from the tape input; the **TAPE** LED will illuminate, together with the LED of the previously selected input. Illuminating the tape and source LEDs indicates that the tape loop is active and indicates the source that will be recorded.

Example:

If you want to record from the CD input:

- Select the **CD** input;
- Press the **TAPE** button – you can now listen to the sound returned from the recording device. In the case of a three-head cassette deck, this will be the audio as recorded onto the tape.

Note that selecting a different source from CD will cause the recording to change to this new source.

VCR/AUX Operation

The AVR280 has VCR and AUX record loops for audio and video (Composite and S-video only). These carry the audio and video (if any) from the currently-selected source. The VCR output is muted if VCR is the selected source; the AUX output is muted if AUX is the selected source.

Example:

If you want to record the SAT input:

- Select the **SAT** input.
- Press the button labeled 'record' (or similar) on your VCR/AUX to begin recording.
- Note that, if you select a different source from SAT, the recording changes to this new source.

Stereo Direct

To listen to a pure analogue stereo input, press the **DIRECT** button. The Direct mode bypasses automatically all processing and any surround functions. In Direct mode, digital processing is shut down to improve the sound quality by reducing the digital noise within the AVR280 to an absolute minimum. The LED above the **DIRECT** button on the front panel will illuminate to indicate this mode.

Important: When 'stereo direct' mode is enabled, bass management is disabled. For this reason, 'stereo direct' mode is not recommended in systems comprising small 'satelite' speakers, as the full-frequency information that would be directed to these units may cause damage to the speaker.

Zone 2

Pressing the **ZONE 2** button allows both the volume and the source being viewed in Zone 2 to be changed from the main zone. While in this 'Zone 2' mode, the LED above the Zone 2 button is illuminated.

When first pressed, the text **ZONE2 SRC** is displayed on the front panel (where 'SRC' indicates the source being viewed in Zone 2). Pressing the source buttons on the front panel while in this state changes the source routed to Zone 2; moving the volume knob adjusts the Zone 2 volume.

To exit this state, press **ZONE 2** a second time.

Headphones

To use headphones with the AVR280, plug the headphones into the socket on the left hand side of the front panel.

When headphones are plugged into the headphones socket the main output is muted.

Effects/FX

The **EFFECT** button (**FX** on the remote) cycles through the available effect modes. The effects are only available when the AVR280 is in stereo mode.

For more information on the effects, see the section 'DSP Effects Modes', page 25.

Effect	Description
None	No effects active, stereo signal
Music	Extracted ambience and centre information
Party	All speakers on
Club	Small room
Hall	Medium reverberant room
Sport	Very reverberant with extracted ambience and dry centre dialogue
Church	Long reverberant room

Mode

When a selected digital input carries a Dolby Digital or DTS signal, the AVR280 detects it automatically and processes the signal accordingly.

For an analogue input or when no Dolby Digital or DTS signal is detected, pressing the **MODE** button cycles through the available surround sound modes; for Dolby Digital or DTS signals, the mode button cycles through the processing modes available for these types of signal. All of the available modes are detailed later in this handbook, starting on page 26.

The selected mode is displayed in the main section of the display for three seconds, before reverting to show the current volume. The surround mode continues to be shown on the display.

Treble/Bass

These allow you to alter temporarily the bass and treble controls for all currently active speakers. In the case of Stereo, this would only apply to the front left and right speakers. In Effects, Pro Logic IIX Music, Dolby Digital and DTS modes (for example), this would apply to all present speakers.

You can adjust the bass and treble by up to ± 6 dB. These adjustments are in addition to those made in 'Speaker Eq' in the Set-up Menu. However, the maximum overall tone control range for each speaker using this screen plus the settings in 'Speaker Eq' is still ± 6 dB (not ± 12 dB).



To select the speaker to be adjusted, press the Treble/Bass button repeatedly until the desired speaker is shown on the front-panel display. Then use the volume control knob to adjust the setting up or down.

Note that bass and treble alterations are not available in Stereo mode when **AUTO STEREO TONE BYPASS** is set to **YES**, or in Stereo Direct mode.

Remote control buttons

In addition to the buttons detailed above, the following remote control buttons are also relevant.

SUB



This button on the remote allows adjustment of the Subwoofer volume. Press **SUB**, then adjust using the   buttons on the navigation pad.

INFO

This button has the same effect as the RDS button on the front panel. See below for details of its operation.

SYN

Delays may be introduced into the video signal by external video processing equipment which causes a mismatch between the audio and video timing. You will notice this by speech sound being out of synchronisation with the lip movements in the video.

To compensate for this you can adjust the lip sync audio delay. Press **SYN** and use the   navigation buttons to change the delay.

See page 22 for a full explanation of this feature.

TRM

This allows temporary adjustment of the speaker levels. Press **TRM** to access the OSD 'Speaker Trims' menu, using the navigation buttons to adjust the levels required. Press again to exit the trim function.

Using the tuner

The AVR280's radio tuner can be controlled from the upper row of front panel buttons (see diagram, below) or from the remote control handset. Note that the tuner behaviour can be seen only via the front-panel display, as there is no on-screen display for the tuner.

Tuning to a station

Pressing the **PRESET/TUNE** button (or **TM** on the remote) toggles between the two tuning modes of the unit – 'Tune' or 'Preset'. The selected mode is shown briefly on the display. When in frequency display mode, the frequency will be followed by a 'T' in tune mode, and 'P' in preset mode.



TUNE MODE

In Tune mode:

- Press the ◀ and ▶ buttons on the front panel (or **P-** or **P+** on the remote control handset) for longer than two seconds to engage automatic tuning. The tuner searches for a radio station signal of sufficient strength and stops. To skip to the next station, press one of the buttons again. Automatic tuning is available for both the FM and AM bands.
- Tapping the ◀ and ▶ buttons engages manual tuning. This can be used for tuning to a specific frequency. It is also useful if you are trying to select a station that is too weak for the auto-search mode.

Regardless of the mode used to tune your AVR280, when it is accurately tuned to a station 'TUNED' lights up in the display.

PRESET MODE

When one or more presets have been defined, 'Preset' mode can be used. In Preset mode, use the ◀ and ▶ buttons on the front panel (or **P-** or **P+** on the remote control handset) to cycle up and down the preset stations.

See below for instructions on storing and deleting presets.

Storing a preset

To store a preset, tune to the radio station you wish to store. Press the **STORE** button (or **DYN** on the remote control): the station frequency is shown on the display, followed by a preset number. Select the preset number you wish to assign to the station using the ◀ and ▶ buttons on the front panel (or **P-** or **P+** on the remote control handset), then press the **STORE** button again.

Once the preset is stored, the display reverts to show the station name (if RDS information is transmitted) or its frequency.

To quit the memory function without storing a preset, leave the tuner controls untouched for five seconds. It is also possible to overwrite a stored station by saving another in its place. There are thirty presets available for FM use and ten for AM use.

Deleting a preset

Press the **STORE** button, then select the preset number you want to delete using the ◀ and ▶ buttons (or **P-** or **P+** on the remote control handset), followed by the **FM MUTE/MONO** button (**1/STATUS** on the remote control).

The display briefly shows 'DELETE' and '- ' is shown in place of the preset number. You can reactivate a deleted preset number by storing a station in the normal way.

RDS: Radio Data System

The Arcam AVR280 supports RDS Programme Service and RDS Radio Text on FM broadcasts.

When a station carrying RDS information is selected 'RDS' lights up in the display and shortly afterwards the station's RDS name (e.g. 'BBC R3') is shown.

Press the **RDS INFO** button to view any RDS text information (if a station is not transmitting text information, the display briefly indicates 'NO TEXT' and reverts to show the station name).

Press **RDS INFO** again to display the station's frequency.

Pressing **RDS INFO** a third time returns you to a display of the station name.

If the **RDS INFO** button is pressed while tuned to a non RDS station, the display shows 'NO NAME' for three seconds before reverting to the default display.

FM Mute/Mono

The AVR280's tuner has an auto-muting circuit that, when engaged, mutes any signal that is of insufficient strength for listening. To engage this circuit press the **FM MUTE/MONO** button on the front panel: 'FM MUTE' is shown in the display. If a signal is muted you will hear no sound through the loudspeakers.

Should you wish to listen to a station that is 'auto muted' press the **FM MUTE/MONO** button again to disengage the muting circuit. The tuner now switches to monoaural reception, cancelling much of the background hiss. 'FM MUTE' is no longer displayed and you are able to continue listening.

Listening to the tuner in Zone 2





The tuner can be selected, as other inputs, for routing to Zone 2. Note, though, that it is not possible to listen to different stations in the main zone and Zone 2 simultaneously. This is because the AVR280 is fitted with just a single tuner module.

Using the Main Menu



Three 'Main Menu' screens allow day-to-day changes to be made to the way the AVR280 operates. Examples include adjusting the tone control for a particular input, or selection of 'direct' mode.

The three Main Menu screens are available on your display device. The selected line of each screen is also displayed on the front panel of the AVR280. Each of the following sections has a picture showing the screen that is displayed as you move through the menus.

Using the remote control to enter the Main Menu

Briefly press the **MENU** button to enter 'Main Menu Screen 1'. Use the navigation  and  buttons to go up and down the menu respectively. The  and  buttons are used to alter the selection on the highlighted line, or to change to the next screen if the menu heading is highlighted.

Using the front panel to enter the Main Menu

Press the **MENU** button to enter the main menu. To cycle through the items on a menu, use the **EFFECT / ▼** button to go down and **MODE / ▲** button to go up one line for each press. Use the volume control knob for the  and  functions in order to cycle through the available choices, or to change the menu page if the menu heading is highlighted.

Main Menu Screen 1

Vol: Shows the present volume being used for the main zone and can be adjusted from here.



Audio Input: This shows the current audio input source selected. The current audio input can be changed when this line is highlighted using the source select buttons on the front panel or the remote. Note that changing the audio input also changes the video input to the same setting.

Video Input: This shows the current video input source selected. The current video input can be changed when this line is highlighted using the source select buttons on the front panel or the remote.

Changing the video input does not change the audio input, so you can watch a different input from the one you are listening to.

If the audio and video are set to different inputs, they will be reset to be the same input when the audio input is next changed.

NOTE: the composite/S-video inputs and the high-quality video inputs are independent of each other. If you are watching a video source by using the one of the high-quality video inputs, it is not possible to change the video input independently of the audio.

Video Type: This setting is applicable only to TVs being fed via a SCART lead where the trigger outputs  and  are connected via suitable SCART header. It shows the video aspect ratio currently selected for the display, which can be set manually to 4:3 or 16:9, depending on which format you are feeding into your TV. See page 12 for further details on using these triggers.

Stereo Direct:

■ **OFF:** the AVR280 functions in its normal way.

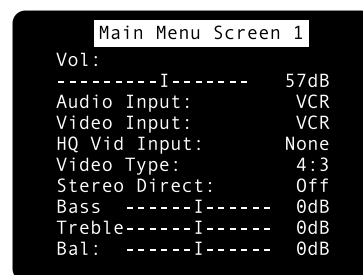
■ **ON:** the AVR280 uses the analogue input signal for the source, bypassing the digital circuitry. In this mode, the AVR280 functions like an analogue amplifier: it also shuts down all the unused digital circuitry for optimum stereo performance. Note that no digital output is available in this case.

Bass and Treble: These allow you to alter temporarily the bass and treble controls for all currently active speakers. In the case of Stereo, this would only apply to the front left and right speakers. In Effects, Pro Logic IIX Music, Dolby Digital and DTS modes (for example), this would apply to all present speakers.

You can adjust the bass and treble by up to ± 6 dB. These adjustments are in addition to those made in 'Speaker Eq' in the Set-up Menu. However, the maximum overall tone control range for each speaker using this screen plus the settings in 'Speaker Eq' is still ± 6 dB (not ± 12 dB).

Note that bass and treble alterations are not available in Stereo mode when **AUTO STEREO TONE BYPASS** is set to **YES**, or in Stereo Direct mode.

Balance: To alter temporarily the sound balance between the front left and right speakers. You can alter the sound stage to either the left or right by up to 10dB. Note that it is not possible to shift the audio signal completely over to one channel.



Main Menu Screen 2

Compression: Allows selection of three different compression ratios (**OFF**, **MEDIUM** and **HIGH**), where the higher compression is intended for 'late night' listening. The compression effect increases the volume of the quiet passages and decreases the volume of the louder passages. Compression can be disabled by setting this item to **OFF**.
Compression is only available on Dolby Digital recordings and on some DTS recordings.

Lip Sync: Allows the introduction and adjustment of a time delay between the audio and video signals to compensate for the sound and picture not being synchronised. This may be required when extra video processing is used in the system, for line doubling or progressive scan video, or for when a DVD has been poorly mastered or a broadcast shows noticeable delay between the video and audio.

The lip sync function works on all sources, unless Stereo Direct is selected. Lip sync is also directly available on the SYN button on the remote control.

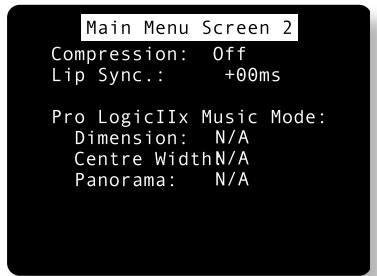
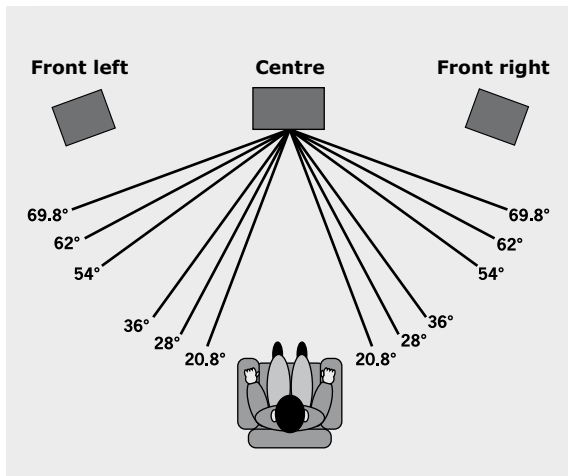
The range of lip sync delay is 0 to 220 milliseconds. The lip sync adjustment can only correct for delayed video: if the audio is delayed, set lip sync to its minimum.

Pro Logic IIX Music Mode: This allows the adjustment of the sound field for Dolby Pro Logic II/X Music decoding of two-channel sources.

■ **Dimension:** allows the user gradually to adjust the soundfield either towards the front or towards the rear. If a recording is too spacious or strong from the surrounds, it can be adjusted 'forward' to get a better balance. Likewise, if a stereo recording is somewhat too 'narrow' sounding, it can be adjusted toward the rear to get a more enveloping, immersive result. We recommend 'Dimension' is set to 3 for normal use.

■ **Centre Width:** With Pro Logic 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 Width 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. We recommend 'Centre Width' is set to 3 for normal use.

■ **Panorama Mode:** Extends the front centre image to include the surround speakers for an exciting 'wrap-around' effect with side wall imaging.



Display	Centre spreading effect
0	No centre spreading
1	20.8°
2	28°
3	36°
4	54°
5	62°
6	69.8°
7	Phantom centre

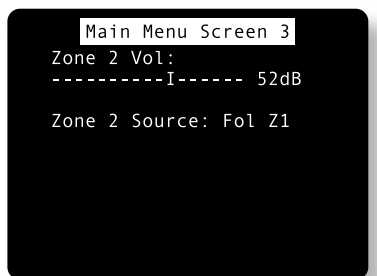
The 'Centre Width' setting for Dolby Pro Logic IIX Music Mode

Main Menu screen 3

This page refers to Zone 2 functions. These are required if your system is installed to send audio and video to a separate 'Zone 2' room, or you wish to make use of the Zone 2 headphone facility.

Vol: Shows present volume being used in Zone 2 and can be adjusted from here. This is also the volume control for the headphones output if it is assigned to Zone 2.

Zone 2 Source: Selects which source is sent to Zone 2. The source can be selected specifically, or can be set to Follow Zone 1.
Note that pressing the **THX** button in Zone 2 will cause the input for Zone 2 to be set to 'Follow zone 1'.



Using Zone 2

Zone 2 provides the option for the occupants of the master bedroom, children's room or kitchen to view or listen to a different source at a different volume level from the main zone.

Control of Zone 2 is via an infra-red receiver that sends commands back to the AVR280. See 'Control Connections' on page 8 for further information.

Surround modes

Introduction

Your AVR280 processor provides all the key decoding and processing modes for analogue and digital signals.

Modes for Digital sources

Digital recordings are usually encoded to include information about their format type. The AVR280 detects automatically the relevant format in a digital signal, such as 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 decoding mode – such as Dolby Pro Logic – needs to be selected manually.

Mode Memory

The AVR280 has a comprehensive memory that allows it to store different settings for each source button. The text below applies to all inputs except 'DVD-A'.

Dolby Digital or DTS audio data (sometimes collectively referred to as 'bitstream' sources) can be output in three mix modes, selected using the **MODE** button:

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

The AVR280 will remember which mix mode was last used with a bitstream source. See 'Multi-channel Source Modes' for more information.

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

- Surround (e.g., Dolby Pro Logic IIX Movie, Neo:6 Music, etc.)
- Stereo (with effects applied for analogue or digital PCM)
- Mono

The AVR280 will remember which mix mode was last used with a two-channel source and, if 'Surround', which particular surround mode. See 'Two Channel Source Modes' for more information. If an effect mode has been applied whilst in Stereo, this will also be remembered.

There is a link between the mix modes for multi-channel bitstream (e.g., 5.1) and two-channel bitstream (2.0 or 2.1) sources. If a 5.1 source is played in Surround mix mode, the AVR280 will remember this for all bitstream sources (e.g., DTS-ES Matrix, Dolby Digital 3.0 etc.) and use the maximum number of speakers the signal is encoded for. As a result, when a 2.0 or 2.1 bitstream is played the Surround mix mode is recalled and the AVR280 enters Dolby Pro Logic IIX Movie mode to try to recreate the surround environment from what may be a Pro Logic encoded source. If you would rather listen to a 2.0 or 2.1 bitstream in ordinary stereo (with or without a subwoofer), press **MODE** to cycle through to the Stereo mix mode (e.g., Dolby Digital 2/0.0 on the display). However, if the source becomes multi-channel bitstream (e.g., 5.1) again, the AVR280 will recall Stereo mix mode and therefore output a Stereo Downmix of the multi-channel signal. Full surround output can be re-achieved by pressing **MODE** to cycle through to the surround mode encoded on the disc.

Digital multi-channel sources

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. Dolby Digital EX and DTS-ES enhanced decoding systems create one extra rear channel from information buried in the two surround signals of the 5.1 source. These EX and ES enhanced systems are sometimes referred to as '6.1' systems. This extra surround back channel is normally reproduced through two separate loudspeakers, creating a '7.1 system'.

5.1 Playback on 7.1 speaker systems

When listening to 5.1 channel digital recordings, such as Dolby Digital and DTS on a 7.1 channel speaker system you will have two speakers producing no sound. These two surround back speakers can be assigned the same signal as the surround speakers in the 'Speaker Sizes' page of the Set-up Menu. When both the surround and surround back speakers are selected the volume from both will be reduced by 3 dB to keep the sound levels in balance.

Two-channel source modes

The following decoding and surround modes are available:

- Mono
- Stereo
- Pro Logic II/IIX Movie
- Pro Logic II/IIX Music
- Pro Logic Emulation
- Neo:6 Cinema
- Neo:6 Music

These modes are available with two-channel analogue and two-channel PCM digital sources (although a Dolby Digital 2.0 source may only be decoded as Mono, Stereo or Pro Logic IIX Movie).

Mono: The AVR280 will combine the left and right audio channels from a stereo signal to produce a mono signal. This can be of benefit when playing older audio recordings or VCR tapes, especially mono LP records.

Analogue Stereo: In this mode the AVR280 works as a conventional high quality audio amplifier. Note that if the subwoofer is enabled in stereo mode, then some processing of the signal will be carried out. For ultimate sound quality with analogue sources, therefore, select the Stereo Direct function.

Digital Stereo: Decodes two-channel digital signals such as PCM signals from sources such as CDs and some DVDs.

Dolby Pro Logic II/IIX: Dolby Pro Logic II decoding is designed to produce a 5-channel output from two channel source material. This is extended by Dolby Pro Logic IIX decoding, which is designed to produce a 5- or 7-channel output from two-channel source material and a 7-channel output from 5-channel material.

There are two different modes available in Pro Logic II/IIX: 'Movie' and 'Music' modes, which are intended for use as their names suggest. Due to the different recording methods used for movies and music, it is recommended that the correct decoding mode for your source material is used to obtain the best results.

- **Movie Mode:** This is intended for use with 'cinematic' material, which is mixed and monitored in a calibrated multi-channel environment. Movie mode is a 'fixed' mode that is designed to give a similar sound when listening using a home cinema system to that obtained in a cinema.
- **Music Mode:** Stereo music is not designed for surround processing, although good surround effects can be obtained through careful production. As the optimum decoding method varies according to the recording, Music mode allows user adjustment of the processing characteristics. Information about adjusting the Music mode by using 'Dimension' and 'Centre Width' controls can be found in the 'Main Menu Screen 2' section.

Dolby Pro Logic: Dolby Pro Logic decoding is a legacy mode that is designed to produce a five-channel output from two-channel source material. It should be used only when the source material is encoded as Dolby Pro Logic; otherwise, we recommend the use of Dolby Pro Logic IIX. This is because Pro Logic processing on straight stereo sources can sound muffled and compressed.

DTS NEO:6: DTS Neo:6 provides up to six full-band channels of decoding from stereo material. The AVR280 will derive separate channels corresponding to the standard home theatre speaker layout.

- **Cinema:** A movie mode designed to reproduce a movie theatre environment. Neo:6 technology allows various sound elements within a channel or channels to be steered separately, and in a way which follows the original presentation naturally.
- **Music:** A music mode designed to produce a lively, high-integrity surround-effect from most two-channel music sources from all available speakers. Neo:6 music mode expands stereo recordings into the five- or six-channel layout without diminishing the subtlety and integrity of the original stereo recording.

Multi-channel source modes

The following modes are available for multi-channel digital sources. Special modes like DTS-ES 6.1 Matrix and DTS-ES 6.1 Discrete are available only from the correct source material.

For Dolby Digital sources:

- Dolby Digital 5.1
- Dolby Digital 5.1 Stereo Downmix
- Dolby Digital 5.1 Mono Downmix
- Dolby Digital Ex
- Dolby Digital Pro Logic IIX

For DTS sources:

- DTS 5.1
- DTS 5.1 Stereo Downmix
- DTS 5.1 Mono Downmix
- DTS-ES 6.1 Matrix
- DTS-ES 6.1 Discrete

Dolby Digital 5.1: The most commonly used sound format for DVD video, and is also the standard for US digital television. Dolby Digital 5.1 sources deliver surround sound with five discrete full-range channels; left, centre, right, surround left, and surround right, plus a low frequency effects (LFE) channel.

Dolby Digital Ex: This is an extension to Dolby Digital decoding that provides a 6-channel output from a 5-channel input. The extra channel is the centre-surround channel (for which the two surround back speakers are used), and is derived from the left and right surround channel information. This decode mode should be used only when the source material is 'Surround EX' encoded (which is normally indicated on the disc packaging and should be detected automatically by the AVR280), but may be used at other times if desired.

Dolby Digital Pro Logic IIX: This is an extension to Dolby Digital decoding that provides a 7-channel output from a 5-channel input. The extra channels are the surround back channels, that are derived from the left and right surround channel information.

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-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 (unlike DTS-ES 6.1 Matrix where the sixth (surround centre) channel information is extracted from the two surround channels). DTS-ES 6.1 Discrete mode operates only on sources with DTS-ES 6.1 Discrete audio encoding, such as certain DVD discs.

A list of available software titles with DTS-ES 6.1 Matrix and DTS-ES 6.1 Discrete titles can be found at www.dtsonline.com.

DSP Effects Modes

The AVR280 has a number of effects modes that can be used to enhance a stereo signal and to make use of the surround loudspeakers. DSP effects modes are only available with stereo source signals.

Music: Music surround makes full use of the additional speakers placed at the centre, sides and rear of the room. This effect uses ambient extraction for the side and rear speakers and offers the most subtle surround processing with no reverberation or reflections.

Party: The Party effect allows unprocessed stereo signals to be played over all speakers for background music or for maximum acoustical output of the system.

Club: The Club effect generates reflections and short reverberation information to the front, side and rear speakers. It simulates a small club venue, such as a Jazz Club.

Concert Hall: The Concert Hall effect generates the ambient information for the simulation of a medium size hall. Reflections and medium length reverberation information are sent to all channels.

Sports: Sports stadium effect is ideal for use when watching live sports events which would normally be in stereo. The open ambience of a sports stadium is actively recreated around you, except from the centre channel which is kept clear for commentary.

Church: The Church effect uses a reverberation algorithm which emphasises rich, smooth reverberant decay in large spaces. As its name suggests, it works well for simulating a space with long reverberation time relative to its size, such as a large church or cathedral.

Speaker positioning

The AVR280 allows you to connect up to seven speakers and an active subwoofer in the main system. The output channels correspond to speakers installed in the front left, centre, front right, surround left, surround right, left surround back, right surround back and an active subwoofer (see diagram).

All speakers, with the exception of the subwoofer, should be arranged around your normal viewing/listening position (see diagram). The subwoofer should be placed in accordance with the instructions of the manufacturer; experiment with it in various positions to obtain the best result.

Front left and right

Position your front left and right speakers to achieve a good stereo image for normal musical reproduction. If they are placed too close together there will be a lack of spaciousness; if they are placed too far apart a stereo image will appear to have a large 'hole' in the middle and will be presented in two halves. If there is no practical alternative to placing the speakers widely apart, this effect can be overcome in music reproduction by using centre sound extraction from the left and right speakers (see the description of 'Dolby Pro Logic IIx Music Mode' later in this handbook).

Centre

The centre speaker allows for a more realistic reproduction of dialogue and centre sounds. The centre speaker should have a similar tonal balance to the front left and right speakers and be positioned at a similar height.

Surround left and right

The surround left and right speakers reproduce the ambient sound and effects present in a multi-channel home cinema system and (for home theatre use) should be installed approximately one metre higher than the listener's ears.

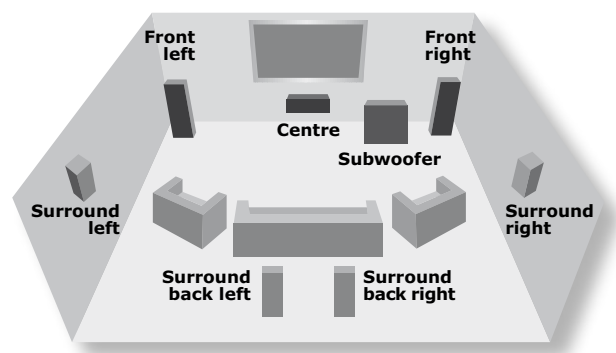
Surround back left and right

The surround back left and right speakers are used to add extra depth and better sound localisation and should be installed approximately one metre higher than the listener's ears. Place the two surround back speakers such that there is an arc of approximately 150 degrees between each surround back speaker and the centre speaker. The surround back speakers should face the front of the room as shown in the diagram to provide the largest 'sweet spot'.

Note: if you have a 6.1 speaker system, with a single surround back speaker, we recommend that you connect this speaker to the surround back left channel of the AVR280.

Subwoofer

A subwoofer will greatly improve the bass performance of your system. This is useful for reproducing special cinema effects, especially where a dedicated LFE (Low-Frequency Effects) channel is available, as with many Dolby Digital or DTS encoded discs.



Bi-wiring and bi-amping loudspeakers

Bi-wiring improves the sound of your system as it divides the high and low frequency signal currents into separate speaker cables. The performance of your system can be further enhanced over that achieved with bi-wiring by extending the principle one stage further to include separate amplification for the low and high frequency drive units in each loudspeaker enclosure. This is called 'bi-amping'.

Before you start – important information!

1. Ensure that the volume control is set to minimum before starting these procedures.
2. Do not make any connections to your AVR280 while it is switched on or connected to the mains supply.
3. After connecting the loudspeakers, but before switching on the AVR280, please check all connections thoroughly, making sure bare wires or cables are not touching the AVR280 in the wrong places (which could cause short circuits) and that you have connected positive (+) to positive and negative (-) to negative.

Bi-wiring your loudspeakers

Bi-wiring avoids signal distortions arising from the high and low frequency currents interacting with one another within a single cable, as occurs in conventionally wired systems.

You will need:

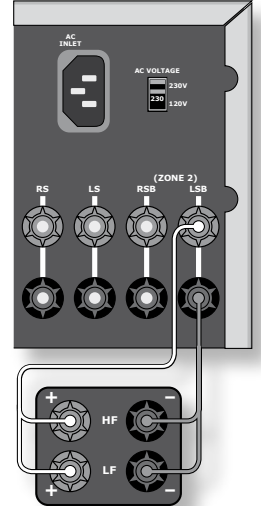
Speakers – with four input terminals each: the terminals will be marked **HF** (High Frequency + and -) and **LF** (Low Frequency + and -).

Loudspeaker cables – two pairs of cables per loudspeaker.

How to bi-wire loudspeakers

1. Remove the terminal links on the rear of your loudspeakers.
Note that If you do not remove the shorting links from the speaker terminals, the speakers will still be single-wired!
2. Connect the cables as shown in the diagram, ensuring correct polarity at all times.

AVR280 (part)



Bi-wiring using the AVR280 (only one speaker is shown, for clarity)

Bi-amping your system

Notes:

- In order to bi-amplify your speakers, your speakers will need to be bi-wirable (have positive and negative terminals for both high frequency (**HF**) and low frequency (**LF**) information). If your speakers are bi-wirable, ensure that the links between the **HF** and **LF** terminals are removed.

WARNING: This step is essential or damage to your AVR280 may result which is not covered under warranty.

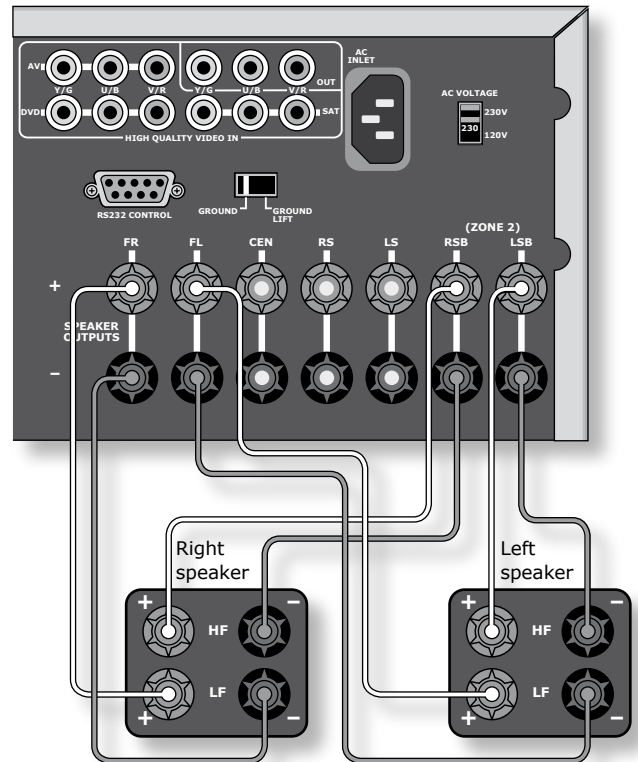
- If you wish to bi-amplify speakers using external power amplifiers, you must use amplifiers with the same gain as the AVR280 (31dB), otherwise the bass and the treble will become unbalanced. Please contact your dealer if you require more information on bi-amping your speakers.

Bi-amping using the AVR280

If channels 6 and 7 of your system are not in use (i.e., you have a system comprised of a maximum of five speakers, excluding the subwoofer), these spare amplification channels may be used to bi-amplify the front left and right speakers of your system.

Follow these steps:

1. Remove the terminal links on the rear of your loudspeakers.
WARNING: This step is essential or damage to your AVR280 may result which is not covered under warranty.
2. Connect the cables as shown in the diagram below, ensuring correct polarity at all times.
3. Ensure that the **USE CHANNELS 6+7** for setting in Basic menu 6 'EX Settings' is set to **BIAMP L+R**. (See page 13 for details of how to do this.)



Bi-amping using the surround back channels of the AVR280 (only the front left and right speakers are shown, for clarity)

Troubleshooting

There are no lights on the unit:

Check that:

- the power cord is plugged into the AVR280 and the mains socket outlet it is plugged into is switched on.
- the power button is pressed in.
- the mains fuse in the plug (if applicable) has not blown. The AVR280 requires a 6-amp fuse, or greater.

If a red LED is present, the AVR280 is in stand-by mode. Press any source button on the front panel or on the remote control.

The unit responds erratically or not at all to the remote control:

Check that:

- there are fresh batteries in the remote control.
- the Remote IR receiver is visible (this is located in the middle of the front-panel display) and that you are pointing the remote control towards it.

The front panel display is blank:

Check that:

- the display hasn't been turned off. Press the **DIS** button on the remote control.

No picture is produced:

Check that:

- your viewing device is turned on and switched to display your AVR280. Test by pressing the **MENU** button on the AVR280 or AVR280 remote and look for the AVR280 'Main Menu Screen 1' displayed on your device.
- the correct video input is selected on the AVR280
- the video source is on, is operating normally, and is in 'play' mode if appropriate.

The video source is different from the audio:

Check that:

- the video and audio inputs are correctly selected in 'Main Menu Screen 1'. Press **MENU**, then change either the video or audio source by first using the navigation (◀) and (▶) buttons, then use the source buttons to select the correct input.
- the digital audio inputs and HQ video inputs are correctly assigned to their sources on the 'Digital Settings' page in the Set-up Menu.

There are bright edges or 'ghosts' on the picture:

Check that:

- the cables used for video connections (not HDMI) are designed for that purpose (i.e., they are 75Ω coaxial cables).
- the 'Sharpness' control on your video display device is switched off or set near minimum.
- If this problem occurs when using an HDMI connection, try using a shorter cable. In general, HDMI signals cannot be run over such long cables as analogue signals.

There is no on screen display (OSD):

Check that:

- your video display device is connected to your AVR280 correctly.
- the on-screen display has not been turned off on the 'Video Settings' page in the Set-up Menu.
- if you are using a component display, check that the AVR280 is set for component video. See the 'Basic Set-up' section.

OSD Display is pink/red:

If a component video signal is fed into the AVR280 when the 'HQ Video' setting is set to **RGB** you will have a pink/red OSD.

To correct this you must set the 'HQ Video' line on the General Settings menu to 'Component'.

No On-Screen Display (OSD) overlaid on video:

The AVR280 cannot overlay video onto progressive scan or HDTV signals. In this case, the AVR280 creates a full screen display with a black background for the menus and turns off the pop up messages.

No sound is produced:

Check that:

- the correct input has been selected.
- the source equipment is on, is operating normally, and is in 'play' mode if appropriate.
- the volume is turned up to a reasonable level and 'MUTE' is not displayed on the front panel display.
- your power amplifier(s) (if any) are turned on and working correctly.
- you have assigned the digital input to the correct source button.
- the AVR280 is not in Stereo Direct mode with only a digital signal supplied.

The sound is poor or distorted:

Check that:

- the cables to that source and to the power amplifier are making a good connection. If necessary withdraw the cable from the connector and plug it back in again. (Turn the power off before doing this)
- you have not excessively reduced the input sensitivity on the 'Input Trims' page in the Set-up Menu if an analogue input has been selected. Check that the input is not clipping by using the 'Analogue Settings' page.
- you have selected the correct size of speakers to suit your system on the 'Speaker Sizes' page in the Set-up Menu.

Sound only comes from some of the speakers:

Check that:

- you have an appropriate surround-sound source selected and playing.
- the DVD disc is encoded in the appropriate format, and that the correct format has been selected in the disc menu of the DVD player (if applicable).
- the DVD player has been set to output 'Bitstream' audio on the digital output.
- the display window indicates that the disc you are playing is a multi-channel recording.
- all the speakers are correctly connected, and are secure.
- you have not selected 'Stereo' in the mode selection.
- your speaker balance is correct.
- all amplifiers are turned on and all channels are working correctly.
- you have configured your AVR280 to include all the speakers in your system.

Unable to select Dolby Digital or DTS decoding modes:

The AVR280 can only apply Dolby Digital and DTS decoding to sources which have been encoded in the same format.

Check that:

- a digital source is selected and connected.
- the source is playing appropriately encoded material.
- the DVD disc is encoded in the appropriate format, and that the correct format has been selected in the disc menu of the DVD player (if applicable).
- the DVD player has been set to output 'Bitstream' audio on the digital output.

When playing a Dolby Digital DVD, the AVR280 selects Dolby Pro Logic:

Check that:

- you have a digital connection from your DVD player.
- sometimes Dolby Digital 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 or Pro Logic encoding.

Hum on an analogue input:

Check that:

- 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.
- try switching the ground lift switch on the back panel.

There is radio or television reception interference:

- check 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.
- try re-arranging cabling from the nuisance source away from other cabling
- ensure that the cabling used is high quality, specified for its purpose, and is properly screened.
- if the problem persists contact your installer.

The source switching changes randomly or freezes on one source:

Check that:

- there are no static or impulse interference problems caused by nearby power equipment switching, e.g., heating or air conditioning control. Switch the AVR280 off, wait ten seconds, then switch it on again to clear an operating problem. Contact your installer if the problem returns or persists.

Volume is always too loud when I turn the system on for the main zone or Zone 2:

Check:

- the 'Max On Volume' line of 'General Settings' or 'Zone 2 Settings' pages in the Set-up Menu. They will need adjusting to a lower level.

You can't select a particular input in Zone 2:

Check that:

- you have not blocked that particular input using the 'Access' line of 'Zone 2 Settings' in the Set-up Menu.

When Zone 2 is put into stand-by, the main zone is also turned off:

Check that:

- the 'Zone 2 Stand-by' line of 'Zone 2 Settings' in the Set-up Menu is set to **Local Only**.

Unstable OSD on screen display:

The AVR280 defaults to the NTSC video standard for US units and PAL for European units.

If your display device is unable to display the default video standard, attach a source component that generates the video standard you wish to use; the AVR280 will switch automatically to the supplied video standard when the source is selected.

No Zone 2 audio when playing DTS film:

Most two-channel DVD players cannot output a stereo decoded version of the DTS signal – the analogue outputs are muted when playing back DTS films. If you want to watch a DVD in both the Main zone and Zone 2, please use the Dolby Digital sound track.

No centre image (vocal) in Zone 2 when using the multi-channel input:

Most DVD/SACD players are unable to provide a two-channel down-mix of source material at the same time as decoding a multi-channel audio stream. Therefore, only the front left and right channels from the multi-channel mix will be available in Zone 2.

To overcome this, play the stereo mix from the DVD-audio disc instead.

Strange aspect ratio of video in Zone 2:

Most DVD players can only decode video to one aspect ratio at a time. For example, if you are using wide screen in the main zone, then wide screen information will also be fed to Zone 2.

To overcome this, either set the film to 4:3 for the main zone when you want to use Zone 2 as well, or change the Zone 2 display to a wide screen capable type.

Unable to adjust bass and treble controls:

Bass and treble is not available in 'Direct' mode. For Analogue Stereo and Digital Stereo modes, check that the 'Auto Stereo Tone Bypass' line of 'Speaker Eq' in the Set-up Menu is set to **NO**.

Digital signal drops out when other electrical appliances turn on (heating, fridge, freezer, etc.):

If a poor quality or incorrect type of cable has been used for the digital inputs, they can pick up electrical noise. Change the cable to a 75Ω low loss coaxial type.

Check the connections have not oxidised. Clean the connectors with contact cleaner if they appear oxidised.

SCART connections

These pinouts describe the signal connections between the AVR280 and your display device input.

SCART RGB cable with audio back to processor

Pin	Signal	Connector type	Connector Pin	Cable Type	Label
1	Audio output B (right) from TV Tuner	RCA Phono (1)	Centre	Coaxial cable (1)	Audio out R
2	Audio input B (right)	Not connected			
3	Audio output A (left) from TV Tuner	RCA Phono (2)	Centre	Coaxial cable (2)	Audio out L
4	Ground (audio)	RCA Phono (1 and 2)	Sleeve	Coaxial cable (1 and 2)	
5	Ground (blue)	RCA Phono (3)	Sleeve	Coaxial cable (3)	
6	Audio input A (left)	Not connected			
7	Blue input	RCA Phono (3)	Centre	Coaxial cable (3)	Blue
8	RGB/composite SCART input select (CVBS status)	Stereo Mini Jack 3.5mm	Ring	Screened twin cable	Trigger RGB
9	Ground (green)	RCA Phono (4)	Sleeve	Coaxial cable (4)	
10	Comms data 2	Not connected			
11	Green input	RCA Phono (4)	Centre	Coaxial cable (4)	Green
12	Comms data 1	Not connected			
13	Ground (red)	RCA Phono (5)	Sleeve	Coaxial cable (5)	
14	Ground (comms)	Not connected			
15	Red input	RCA Phono (5)	Centre	Coaxial cable (5)	Red
16	RGB mode select	Stereo Mini Jack 3.5mm	Tip	Screened twin cable	
17	Ground (video input & output)	RCA Phono (6 and 7)	Sleeve	Coaxial cable (6 and 7)	
18	Ground (RGB switching control)	Stereo Mini Jack 3.5mm	Sleeve	Screened cable	
19	Video output (composite)	RCA Phono (6)	Centre	Coaxial cable (6)	Comp out
20	Video input (composite)	RCA Phono (7)	Centre	Coaxial cable (7)	RGB sync (Comp in)
21	Common ground (shield)	SCART	Sleeve	Overall Cable Screen	

SCART S-video cable with audio back to processor

Pin	Signal	Connector Type	Connector Pin	Cable Type	Label
1	Audio output B (right) from TV Tuner	RCA Phono (1)	Centre	Coaxial cable (1)	Audio out R
2		Not connected			
3	Audio output A (left) from TV Tuner	RCA Phono (2)	Centre	Coaxial cable (2)	Audio out L
4	Ground (audio)	RCA Phono (1 and 2)	Screen	Coaxial cable (1 and 2)	
5		Not connected			
6		Not connected			
7		Not connected			
8	CVBS (AV control)	Stereo Mini Jack 3.5mm	Ring	Screened cable	Trigger S-video
9		Not connected			
10		Not connected			
11		Not connected			
12		Not connected			
13	Ground (chroma)	S-video Mini DIN	Pin 2	Coaxial cable (3) screen	S-video
14		Not connected			
15	Chroma input	S-video Mini DIN	Pin 4	Coaxial cable (3) centre	S-video
16		Not connected			
17	Ground (video input & output)	S-video Mini DIN	Pin 1	Coaxial cable (4) screen	S-video
18	Ground (S-video SCART input select)	Stereo Mini Jack 3.5mm	Sleeve	Screened twin cable	
19		Not connected			
20	Video input (luma)	S-video Mini DIN	Pin 3	Coaxial cable (4) centre	S-video
21	Common ground (shield)	SCART		Overall Cable Screen	

IR Remote Codes

The following information is supplied for owners of advanced programmable remote controls, such as the Philips 'Pronto' and similar devices, where it is possible to program remote codes directly into the device.

The coding system for the AVR280 is based on the Philips RC-5 standard. The main system control uses RC-5 system codes '16', with the tuner section using system code '17' (this is to provide compatibility with existing ARCAM tuners). So, for example, to program in a 'Stand-by' command, use the command '16-124'.

Zone 2 also uses RC-5 system code 16 as standard, as Zone 2 is normally operated in a separate room using a standard (system code 16) remote control.

Main system control code, **system code 16**. Items shown in **THIS STYLE** indicate the equivalent remote control button of the supplied CR100 remote control.

Command	Command code
Stand-by	124
On	123
Zone 1 stand-by	125
Power toggle	12
Display (DIS)	59
Menu (MENU)	82
Info	55

Mute	119
Un-mute	120
Mute toggle (MUTE)	13
Volume up	16
Volume down	17

SAT input	0
AV input	2
TUNER input	3
DVD input	4
TAPE input	5
VCR input	6
AUX input (AUX)	8
CD input	7
DVD-A input	9

Stereo Direct on	78
Stereo Direct off	79
Stereo Direct toggle	10

Up	86
Down	85
Left	81
Right	80
OK	87

Zone 2 on from Zone 1	47
Zone 2 off from Zone 1	48

Command	Command code
MODE	32
Mono mode	106
Stereo mode	107
Dolby PLII Movie	108
Dolby PLII Music	109
(Reserved)	102
Dolby PL Emulation	110
DTS Neo:6 Cinema	111
DTS Neo:6 Music	112
Dolby PLIIx Movie	103
Dolby PLIIx Music	104
(Reserved)	105

Effect (FX)	70
Effect off	63
Effect: Music	64
Effect: Party	65
Effect: Club	66
Effect: Hall	67
Effect: Sport	68
Effect: Church	69

Trim menu (TRM)	37
Sub trim menu (SUB)	51
Lip sync. (SYN)	50
Setup menu (SETUP)	84

Satellite video	19
AV video	20
DVD video	22
Tape video	23
VCR video	24
Video standard	126

Preset/Tune down (P-)	57
Preset/Tune up (P+)	56
Preset/Tune mode toggle	54

These extra commands on code 17 allow full control of the tuner in the AVR280 using the remote control supplied with the T61/T31. The AVR280 responds to these commands in both the main zone and Zone 2.

System code 17.

Command	Command code
Tune down (seek down if pressed for >1 second)	31
Tune up (seek up if pressed for >1 second)	30
Seek down	35
Seek up	34
Preset/Tune up	32
Preset/Tune down	33
Preset/Tune mode toggle	37
Preset store	41

RDS programme	62
RDS text	63
RDS frequency	64

Mono	54
Stereo	39

Preset 1 (preset 9 if pressed for > 1 second)	1
Preset 2 (preset 10 if pressed for > 1 second)	2
Preset 3 (preset 11 if pressed for > 1 second)	3
Preset 4 (preset 12 if pressed for > 1 second)	4
Preset 5 (preset 13 if pressed for > 1 second)	5

Command	Command code
Preset 6 (preset 14 if pressed for > 1 second)	6
Preset 7 (preset 15 if pressed for > 1 second)	7
Preset 8 (preset 16 if pressed for > 1 second)	8
Preset 9	9
Preset 10	110
Preset 11	111
Preset 12	112
Preset 13	113
Preset 14	114
Preset 15	115
Preset 16	116
Preset 17	117
Preset 18	88
Preset 19	89
Preset 20	90
Preset 21	91
Preset 22	92
Preset 23	93
Preset 24	94
Preset 25	95
Preset 26	96
Preset 27	97
Preset 28	98
Preset 29	99
Preset 30	100

In addition to the system '17' commands shown above, Zone 2 also responds to the following commands.

System code 16.

Command	Command code
Stand-by	124
On	123
Power toggle	12

Mute	119
Un-mute	120
Mute toggle (MUTE)	13
Volume up	16
Volume down	17

Preset/Tune down	57
Preset/Tune up	56
Preset/Tune mode toggle	54

Command	Command code
SAT input	0
AV input	2
TUNER input	3
DVD input	4
TAPE input	5
VCR input	6
AUX input (AUX)	8
CD input	7
DVD-A input	9

Technical specifications

Analogue audio inputs	
Line input sensitivity	0.5/1/2/4V rms (2V rms normal)
Overload margin	+2dB
Input impedance	>22k Ω
Analogue audio outputs	
Level (at 0dB gain)	2V rms
Maximum level	3.5V rms
Impedance	600 Ω
Signal/Noise ratio (analogue input)	100dB unweighted (measurement bandwidth 22kHz)
Signal/Noise ratio (digital input)	100dB unweighted (measurement bandwidth 22kHz)
THD+N (analogue input)	90dB (0.003%) (measurement bandwidth 22kHz)
THD+N (digital input)	90dB (0.003%) (measurement bandwidth 22kHz)
Frequency response	20Hz – 20kHz (\pm 0.25dB)
Headphone impedance	390 Ω
Power amplifier	
Continuous power output (8 Ω)	
any 2 channels driven	100W (20Hz – 20kHz @ 0.2% THD)
all 7 channels driven	80W (1kHz @ 0.2% THD)
THD at 80% rated power output	0.02% (at 1kHz)
Video inputs and outputs	
Input and output impedance	75 Ω
Composite video level	1V
HF response to (-3dB)	12MHz
S-video level (Y/C)	1V/0.28V
HF response to (-3dB)	12MHz
HQ (component) video	
level (Y/Cr/Cb)	1V/0.5V/0.5V
level (R/G/B)	1V/1V/1V
HF response to (-3dB)	150MHz
Digital audio inputs	
Coaxial connection (level/impedance)	0.5V/75 Ω
Acceptable sampling frequencies	44.1kHz, 48kHz and 96kHz
Digital output level/impedance	0.5V/75 Ω
Trigger outputs	
Output D.C. voltage level (excl. RGB status)	12V \pm 1V
Allowable load	30mA max. (min. 400 Ω)
Remote inputs and output	
Signal	modulated 36kHz carrier
Coding	Philips RC-5
General	
Mains voltage	110–115V and 230–240V (switchable)
Power consumption (maximum)	1000VA
Dimensions W x D x H (including feet)	433 x 420 x 145mm
Weight (net)	15.9kg
Weight (packed)	21.0kg
Supplied accessories	Mains lead, CR100 remote control, 4 x AAA batteries
E&OE. 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.

Radio interference

The AVR280 is a digital audio device which have been designed to very high standards of electromagnetic compatibility.

The unit can radiate RF (radio frequency) energy. In some cases this can cause interference with FM and AM radio reception. If this is the case, keep the AVR280 player and its connecting cables as far from the tuner and its aerials as possible. Connecting the AVR280 and the tuner to different mains sockets can also help to reduce interference.

EU COUNTRIES – These products have been designed to comply with directive 89/336/EEC.

USA – These products comply with FCC requirements.

Guarantee

Worldwide Guarantee

This entitles you to have the unit repaired free of charge, during the first two years after purchase, at any authorised Arcam distributor provided that it was originally purchased from an authorised Arcam dealer or distributor. 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 and labour costs for two years from the purchase date. After two years you must pay for both parts and labour costs. **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, or failing this, directly to the Arcam distributor in the country of residence. 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:

Arcam Customer Support Department,
Pembroke Avenue,
Waterbeach,
CAMBRIDGE, CB25 9QR,
England

If you have a problem, always contact your dealer in the first instance. If your dealer is unable to answer any query regarding this or any other Arcam product please contact Arcam Customer Support and we will do our best to help you.

On line registration

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

ARCAM

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