# Arcam P90 and P90/3 amplifiers

**ARCAM**

# Safety guidelines

**CAUTION** | **ATTENTION**

RISK OF ELECTRIC SHOCK DO NOT OPEN | RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

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

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

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

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

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

## 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. We recommend a minimum distance of 50mm (2 inches) around the sides and top of the appliance to provide adequate ventilation.

### 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.

### 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 standby 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.
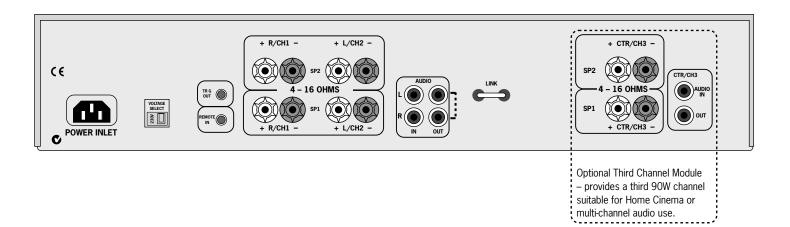
### 16. Damage requiring service

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.

## Safety compliance

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

# Installation: P90 power amplifer



Optional Third Channel Module – provides a third 90W channel suitable for Home Cinema or multi-channel audio use.

## Connecting to power, loudspeakers and other equipment

Follow the installation instructions for the integrated amplifier on pages 4 and 5.

**AUDIO IN** – Connect this input to the output sockets of your pre-amplifier or the **PRE OUT** sockets of an integrated amplifier.

**MONO LINK** – The power amplifier can be adapted to provide two mono loudspeaker outputs from a single input. Pull out the link supplied and use it to connect the **L** and **R AUDIO OUT** sockets together. Using one power amplifier per loudspeaker will enable you to bi-amplify bi-wireable loudspeakers.

This is particularly beneficial for top quality stereo installations with a separate pre-amplifier, or where amplifiers are provided for the left, centre and right channel loudspeakers in a five speaker Dolby Pro Logic or Dolby Digital system.

Contact your Arcam dealer for more information.

**"Daisy chaining"** – The power amplifier can be connected to further power amplifiers to drive more speakers (e.g. those in other rooms or tri-amplified speakers, etc).

Connect the extra power amplifier inputs to the **AUDIO OUT** sockets on the power amplifier, left to left, right to right.

## Remote switching

By making a connection from the **REMOTE IN** socket of the P90 power amplifier to the **TRIG OUT** socket of the A90 integrated amplifier, you can use the A90 to switch the power amplifier on and off. If configured in this way, the front panel **POWER** button of the A90 (or the **POWER/STANDBY** button on the remote control) switches both amplifiers on and off together. This facility allows you to conceal the power amplifier yet still control it.

The connecting cable required is a 3.5mm to 3.5mm jack lead (stereo or mono) and it is possible to connect several power amplifiers to an A90 by 'daisy chaining' from **TRIG OUT** of one P90 into the **REMOTE IN** of the next.
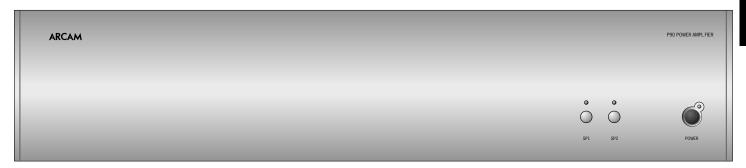
## Three channel option

The power amplifier can be upgraded from stereo to three channels by adding a Third Channel Module: in this case, the model is designated P90/3.

The module offers extra loudspeaker terminals together with a third set of **AUDIO IN** and **OUT** phono sockets and converts the P90 into a 3 x 90W (RMS per channel into 8Ω) amplifier suitable for Home Cinema or multi-channel audio use.

Contact your Arcam dealer for further details.

# Using your P90 power amplifier

ARCAM                                                                P90 POWER AMPLIFIER

                                                          SP1    SP2              POWER

**POWER (and power indicator light)**

Switches the unit on and off. The light indicates the status of the amplifier.

When you switch your amplifier on, the light glows amber for a few seconds, during which time the speakers are disconnected. The light changes to green when the amplifier is ready for use. A red light means the amplifier is in standby mode.

The power light may flash if a fault has occurred, with the colour of the flashing light indicating the nature of the fault:

- **green** – a D.C. offset fault has occured
- **amber** – a thermal fault has occured (the amplifier is too hot)
- **red** – a short circuit fault has occured (this can happen if the speaker cables are not connected correctly and are making contact with each other or with the chassis)
- **red and amber** – more than one fault has occured.

Except for a thermal fault, if one of the above faults is detected by your amplifier the unit waits for six seconds before checking to see if the fault has cleared. If the fault clears within six seconds, then the unit continues operation; otherwise the unit shuts itself down. In the case of a thermal fault, the unit waits until its sensor temperature lowers before resuming operation.

If the amplifier has shut itself down, you should unplug the amplifier and leave it for a few minutes before reconnecting. If the fault cannot be cleared, unplug your amplifier and contact your Arcam dealer.

**SP1 and SP2**

These buttons allow you to select and deselect the main (**SP1**) and secondary (**SP2**) sets of speakers attached to your amplifier. An indicator light shows which set of speakers are currently selected.

**NOTE**: If both lights are out the amplifier will appear not to work, as all speakers are switched off.

# Bi-wiring and bi-amping loudspeakers

## Before you start

**WARNING: Do not make any connections to your amplifier while it is switched on or connected to the mains supply.**

**Before switching on please check all connections thoroughly, making sure bare wires or cables are not touching the amplifier in the wrong places (which could cause short circuits) and you have connected positive (+) to positive and negative (–) to negative.**

**Always ensure that the volume control on your amplifier is set to minimum before starting these procedures.**

## Bi-wiring your loudspeakers

Bi-wiring improves the sound of your system because it divides the high and low frequency signal currents into separate speaker cables. This avoids signal distortions arising from the high and low frequency currents interacting with one another within a single cable, as in conventionally wired systems.

### You will need:

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

Loudspeaker cables – two pairs of cables per loudspeaker (which may be joined at the amplifier end if your amplifier has only one pair of output terminals per channel), or a suitably terminated cable set.

### How to bi-wire loudspeakers

1.  Remove the terminal links on the rear of your loudspeakers

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

2.  Connect the cables as shown in the diagram below, ensuring correct polarity at all times.

## Bi-amping your system

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.

Connect the integrated amplifier to the high frequency (**HF**) terminals and connect the power amplifier to the low frequency (**LF**) terminals.

### You will need:

Speakers – with four input terminals each (as with bi-wiring): these will be marked **HF** (High Frequency) and **LF** (Low Frequency).

Two amplifiers – one of these would be the A90 and the other an Arcam power amplifier (e.g. P90).

Loudspeaker cables – two pairs of cables per loudspeaker or a suitably terminated cable set.
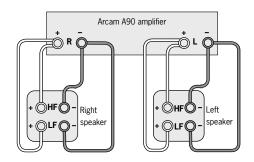
Interconnect cables – one pair of high quality interconnect cables.
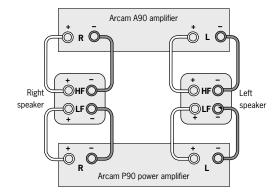
### How to set up a bi-amped system

1.  Remove the terminal links on the rear of your loudspeakers.

> **WARNING: This step is essential or damage to your amplifier 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.  Use the interconnect cables to connect the **PRE OUT** sockets of the A90 to the corresponding **AUDIO IN** sockets of the power amplifier.

**Bi-wiring using one set of connections on amplifier**

**Recommended bi-amping configuration**

# Remote-control codes

The following table gives the IR-commands accepted by the A90.

**Power commands**

| Command | Decimal Code |
| --- | --- |
| Power toggle | 16–12 |
| Power-on | 16–123 |
| Power-off | 16–124 |

**Source selection commands**

| Command | Decimal Code |
| --- | --- |
| PHONO select | 16–1 |
| AV select | 16–2 |
| TUNER select | 16–3 |
| DVD select | 16–4 |
| TAPE select | 16–5 |
| VCR select | 16–6 |
| CD select | 16–7 |
| AUX select | 16–8 |

**Volume control commands**

| Command | Decimal Code |
| --- | --- |
| Mute | 16–13 |
| Volume up | 16–16 |
| Volume down | 16–17 |

**Menu navigation commands**

| Command | Decimal Code |
| --- | --- |
| UP | 16-32 |
| DOWN | 16-33 |
| SELECT | 16–37 |
| ENTER | 16–87 |

**Speaker control commands**

| Command | Decimal Code |
| --- | --- |
| Speaker 1 toggle | 16–35 |
| Speaker 2 toggle | 16–39 |
| Speaker 1 on | 16–43 |
| Speaker 1 off | 16–44 |
| Speaker 2 on | 16–45 |
| Speaker 2 off | 16–46 |

**Display control commands**

| Command | Decimal Code |
| --- | --- |
| Display | 16–59 |

Note that the A90 also responds to code 20–53 (the Play command for an Arcam CD player). The A90 swiches automatically to CD input on receiving this command.

# Service information

Before returning your amplifier for service, please check the following:

**Sound cuts out for no reason**

If the temperature of the internal heatsink rises above a safe level, then a thermal cutout inside the amplifier will operate.

The power indicator on the front panel flashes and the protection system temporarily removes the power to the speakers. The system resets itself as the heatsink cools down.

- With two pairs of low impedance speakers connected, overloads are more likely. Overloading the amplifier may cause it to shut down because of overheating.
- Note that because of the high output voltage from a CD player, it is possible to drive the A90 at full power even though the volume is not set at maximum.
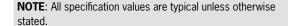
**Amplifier does not switch back on**

The A90 and P90 amplifiers have a protection mechanism which is activated if you switch the unit on immediately after turning it off. If this mechanism activates, wait 30 seconds then try again.

# Technical specifications

| | A90 | P90 |
|---|---|---|
| **Continuous power output, per channel** | | |
| Both channels, 8Ω, 20Hz–20kHz | 90W | 90W |
| Single channel, 4Ω, 1kHz | 150W | 150W |
| Distortion, 8Ω, 80% power, 1kHz | 0.005% | 0.005% |
| **Inputs** | | |
| Phono cartridge (optional module) | | |
| input sensitivity, MM | 2.5mV | |
| input sensitivity, MC | 250µV | |
| Line and tape inputs | | |
| Nominal sensitivity | 250mV | 700mV |
| Input impedance | 22kΩ | 22kΩ |
| Signal/noise ratio (CCIR) | 105dB | 112dB |
| Tone controls, max. boost/cut | ±12dB | |
| **Preamplifier outputs** | | |
| Nominal output level | 700mV | |
| Output impedance | <50Ω | |
| **General** | | |
| Power consumption (maximum) | 800VA | 800VA (950VA for P90/3) |
| Dimensions W x D x H (including feet) | 435 x 340 x 100mm | 435 x 320 x 100mm |
| Weight (net) | 9kg | 9.5kg (10.5kg for P90/3) |
| Weight (packed) | 10.5kg | 11kg (12kg for P90/3) |
| Supplied accessories | mains lead CR-389 remote control 2 x AAA batteries | mains lead |
| E&OE | | |

**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.

**NOTE**: All specification values are typical unless otherwise stated.

# 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
CB5 9QR, England.

| | |
|---|---|
| Telephone: | +44 (0)1223 203200 |
| Fax: | +44 (0)1223 863384 |
| Email: | support@arcam.co.uk |

**Problems?**
If your dealer is unable to answer any query regarding this or any other Arcam product please contact Arcam Customer Support on +44 (0) 1223 203200 or write to us at the above address 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**