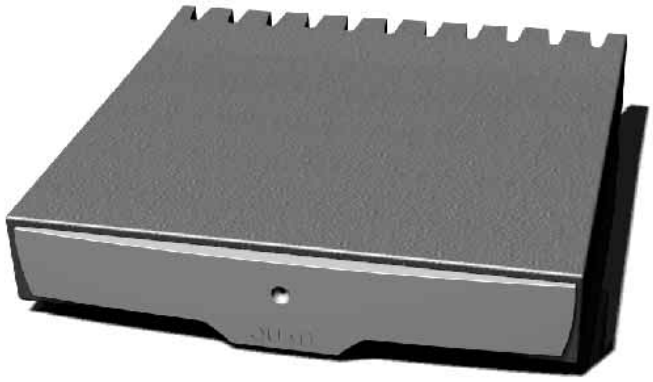
QUAD

99

99 Stereo Power Amplifier and 99 Mono Power Amplifier Instruction Manual



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IMPORTANT NOTES

European Union Directives

Quad equipment is designed to comply with the legal provisions of EU Directives 89/336/EC and 72/23/EEC. The standards which have been applied were those in force at the time of the introduction of the product.

The product bears the CE mark: CE

Compliance cannot guarantee perfect performance. In the very rare circumstance that you experience problems you should first try to locate and remedy the origin of any disturbance. A further option is to relocate the Quad equipment in order to reduce the interference. Your dealer should be able to provide assistance if the problem persists.

FCC Rule 15 Class B

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

- Re-orient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment into an outlet on a mains circuit different to that to which the receiver is attached
- Consult the dealer or an experienced radio/TV technician for help

This Class B apparatus meets all the requirements of the Canadian Interference Causing Equipment Regulations.

Information to the user

Alteration or modifications carried out without appropriate authorisation may invalidate the user's right to operate the equipment.

It is always good practice to switch off equipment before connecting or disconnecting signal leads. This will prevent unpleasant and loud noises coming from the loudspeakers and avoid the risk of damage to equipment.

This equipment is double insulated and does not need a safety earth. It is important, though, that any equipment connected to it is earthed according to the manufacturers' instructions. This becomes more important as the number of units which are connected together increases.

Noise Pollution

Please be aware that very high sound pressure levels can cause permanent damage to your hearing and also severe annoyance to neighbours.

INTRODUCTION

The Quad 99 power amplifier has an advanced specification. As this unit is capable of generating extremely high power outputs it is particularly important that you read the following instructions with particular care.

Although this amplifier has primarily been designed for use with Quad 99 Series components, it may be connected to any preamplifier with an output level of .775V (0dBu) or higher.

PACKING LIST AND UNPACKING THE EQUIPMENT

The packaging contains the following items:

- The 99 Stereo Power Amplifier or 99 Mono Power Amplifier
- One 0.5m 2 core IEC male/female mains lead, QU2005A or one mains lead QUKES2B or QE2P2S2.
- One 160mm long Ampbus terminated link cable, Q37414A
- Instruction Manual
- Warranty Registration Form
- One set of packing materials comprising:
  One set of expanded polystyrene end cheeks
  One cardboard carton
  One polythene protective bag

Consult the dealer from whom you purchased the equipment if any of these items is not present.

Please retain the packing materials for future use or return them to your dealer. If you decide not to keep the packing, please dispose of it sensibly. The paper and plastics components are recoverable and may be taken to an appropriate recovery service.

Please retain the user manual and the information concerning the date and place of purchase of this equipment for future reference.

GUARANTEE AND PRODUCT REGISTRATION

Your Quad equipment is guaranteed against any defect in material and workmanship for one year from the date of purchase (proof of purchase required). We request that you complete and return the enclosed Warranty Registration Form. This will also enable us to keep you informed of future Quad products. Within the guarantee period, Quad will undertake replacement of defective parts free of charge provided that the failure was not caused by misuse, accident or negligence. Your statutory rights within the territory in which you purchased the equipment are not affected by this guarantee.

Quad carries out a regular review of its products and reserves the right to adjust the specifications and performance from time to time.

There are no user replaceable or serviceable parts inside this equipment. Unauthorised attempts to service or modify this product will invalidate the warranty.

SERVICE ARRANGEMENTS

If your Quad equipment requires servicing you should return it to the dealer from whom the equipment was purchased.

If you are abroad and there is no suitable dealer in your area, please contact

the distributor for the country in which it was purchased or Quad Electroacoustics Ltd.

Equipment returned for service should use the original packing. You should enclose a brief note with your name and address and the reason for returning the equipment.

ACCESSORIES

The following optional accessories are available.

Accessory description	Part No.
IEC mains cable 2m, fitted with UK plug	QUKES2B
IEC mains cable 2m, fitted with European plug	QE2P2S2
QuadLink bus cable 160mm	Q37414A
QuadLink bus cable 1m	Q37404A
Double ended phono cable 500mm	QP2P2SA
Double ended phono cable 1m	QP2P21A
Double ended phono cable 2m	QP2P22A

Note: *We do not supply loudspeaker cables terminated with 4mm plugs nor the 4mm plugs themselves.*

CARE AND CLEANING

The surface of the equipment may be cleaned with a damp cloth provided that the power has been removed first. Solvent based cleaning materials should not be used as they may damage the paint finish.

SAFETY AND OPERATION OF ELECTRICAL PRODUCTS

All electrical products carry with them the risk of electrical shock if they are misused. Quad 99 series equipment is intended for use in a domestic environment.

It is important that all electrical connections are competently and securely made to the unit before power is applied. Access to the rear of the equipment should be protected by careful placement of the equipment. Bear in mind that the voltage from the output of this power amplifier can exceed 50V peak and that metal parts, such as loudspeaker connectors, must not be touchable while the equipment is powered.

Mains working voltage and fuse ratings

The rated voltage for this unit is marked on the rear panel. Please check with the dealer if you intend to use the equipment in regions which use different values of mains voltage.

Quad manufactures equipment to the following principal mains voltage requirements:

- Europe, including the UK, uses 230VAC
- Japan uses 100VAC
- USA, for example, uses 117VAC
- Korea, for example, uses 220VAC

If you are in any doubt what the correct operational voltage is you should ask a qualified electrician before applying power to the equipment. The Quad 99 amplifier will work within standard tolerances of this voltage.

The mains supply fuse of the Quad 99 amplifier is accessible on the rear panel when the IEC mains plug has been removed. In the rare event that it has broken, you should first check for any obvious cause before replacing the fuse with one of the correct rating and type. The correct fuse values are:

Country or region	Nominal mains voltage	Fuse rating
Europe including UK	230VAC	T3.15AL slow blow 5x20mm
Japan	100VAC	T6.3AL slow blow 5x20mm
Korea, for example	220VAC	T3.15AL slow blow 5x20mm
USA, for example	117VAC	T6.3AL slow blow 5x20mm

You should switch off the equipment and remove the connection to the mains power outlet before changing the fuse.

Mains Connections

Quad equipment supplied is provided with a mains cable fitted with an appropriate mains plug. With the Stereo amplfier there is a lead to connect to the back of the Pre Amplifier. The Mono amplifier will have a mains lead to plug in the wall socket. This plug should not be cut from the cable. If, for any reason, the plug is removed, it must be safely disposed of. It must ***never*** be plugged into a mains outlet.

Any replacement plug should be wired to the supplied mains cable as follows:

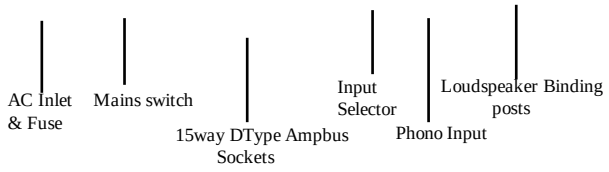
- the BROWN wire must be taken to the LIVE terminal
- the BLUE wire must be taken to the NEUTRAL terminal

In the UK a fused 13 Amp mains plug should be fitted with a fuse link rated to 13 Amp which conforms to BS1362. In other countries a value between 10 Amps and 15 Amps should be used at either the wall socket or at the mains distribution board.

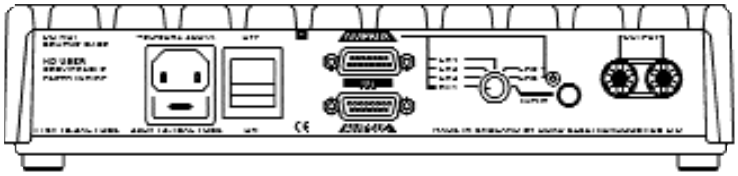
When you are trimming or cutting cables and wires you should be careful to avoid the waste parts from falling onto or into any electrical equipment. If you are in any doubt you should consult a qualified electrical engineer.

INSTALLING THE QUAD 99 STEREO POWER AMPLIFIER

Stereo amplifier



Mono amplifier



Before connecting the QUAD amplifier to the AC mains supply check that the voltage marked on the back matches the voltage of your supply.

Mains On/Off Switch

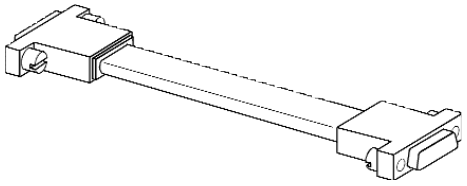
The Mains On/Off switch is on the rear panel. When the amplifier is connected to a Quad 99 system with the special AMPBUS cable this switch should normally be left switched on as the amplifier will be remotely switched.

Where the amplifier is not part of a Quad 99 system the Mains On/Off switch should be switched off when the amplifier is not in use.

Signal Input Connections

When the 99 amplifier is used as part of a 99 system, you should use the 99 AMPBUS lead provided to connect to the output of the 99 preamplifier or the 99AV processor.

Quad 99 units are connected via special multiway cables. The ends are terminated with a male and female 15 way D type connector. They are available in lengths of 160mm and 1m.



When used to link control units they are referred to as QUADLINK and when connecting amplifiers they are referred to as AMPBUS cables.

AMPBUS signal is differential. This offers performance advantages over the usual unbalanced mode.

Channel Selector

The Quad AMPBUS system carries channels for normal stereo signals as well as the centre, subwoofer and rear channels required for AV applications.

The rotary switch on the back of the amplifier should be used to select the appropriate channel. These channels are:

CH1	Stereo Left	CH2	Stereo Right
CH3	Rear Left	CH4	Rear Right
CH5	Centre	CH6	Subwoofer

The INPUT setting selects the RCA phono input. This setting should be used only when the amplifier is used with non-Quad 99 series equipment.

System connections using AMPBUS and the 99 Stereo Power Amplifier

Each amplifier has two AMPBUS sockets on the rear panel. Plug an AMPBUS lead into the *upper* socket of the amplifier. The other end should be plugged into the AMPBUS socket of the Quad 99 preamplifier or AV processor which will be sited above the units.

System connections using AMPBUS and the 99 mono Power Amplifier

Under normal circumstances, two 99 mono amplifiers will be used as the left and right channels respectively of a stereo installation, as part of a Quad 99 system.

Place one amplifier on top of the other.

Each amplifier has two AMPBUS sockets on the rear panel. Plug an AMPBUS lead into the *upper* socket of the *upper* amplifier. The other end should be plugged into the AMPBUS socket of the Quad 99 preamplifier or AV processor which will be sited above the units.

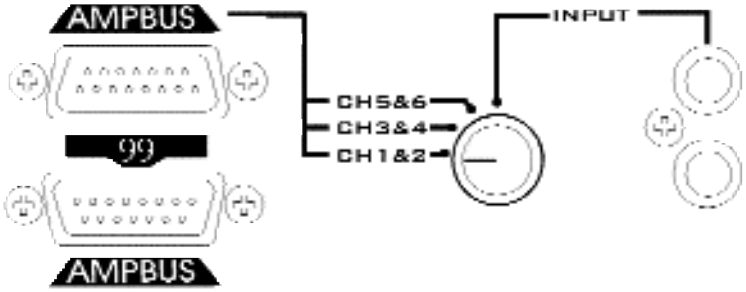
The other AMPBUS lead is connected between the lower AMPBUS socket of the upper amplifier and the upper socket of the lower amplifier so that you have a daisy chain. AMPBUS sockets are alternately male and female so this should be relatively straightforward.

Note: Always check that the channel selector has been positioned correctly.

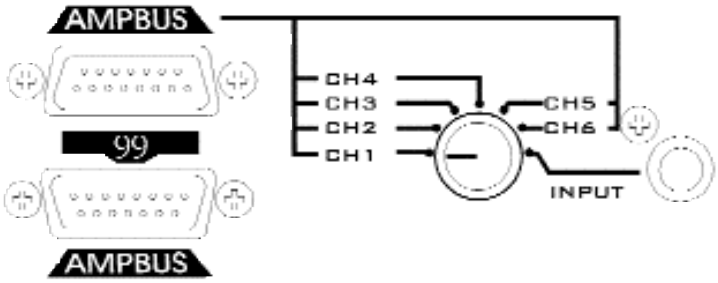
Bi-Amping for Mono or Stereo Amplifier

The AMPBUS system is both simple and versatile. By using the AMPBUS system, you can add two more 99 mono amplifiers for bi-amping. As all Quad 99 series amplifiers are gain matched, you can use a pair of 99 mono amplifiers in combination with a Quad 99 stereo power amplifier. When bi-amping, remember to have the channel switch set to the correct channel.

Bi-amping for stereo power amplifier



Bi-amping for mono power amplifier



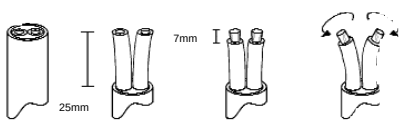
Connecting to extenal sources.

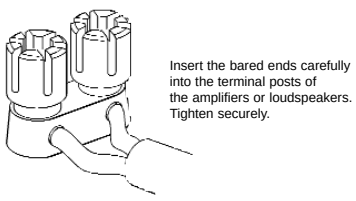
When the Quad amplifier is used with equipment other than as part of a 99 system, you should use an appropriate lead to connect to the RCA phono input and the channel selection switch should be set to INPUT.

Note: *The Quad 99 amplifier is capable of high voltage and current delivery. You should only connect it to a source unit with a variable output (volume control).* ***On no account must you connect the amplifier to a source unit with a fixed output.***

Connecting Loudspeakers

Loudspeaker cables should be carefully prepared. The following sketches show the preparation of a speaker cable for use with Quad power amplifiers and loudspeakers. When stripping the insulation, be careful not to cut into the wire. Make sure that you collect together all the strands of wire as stray wires may cause shorting which could result in damage or cause a fire.





When estimating the length of loudspeaker cable, provide sufficient to enable access and tidy securing. Some cable, is quite heavy and you should be careful to place your cables so that they do not cause undue strain on the binding posts of the amplifier or loudspeaker.

Note: *Please ensure that all cables used with Quad equipment are appropriate to the task and are correctly terminated. For safety reasons Quad equipment is designed not to accept 4mm connectors.*

Phase

Make sure that both channels are connected in phase. The positive (red) output terminal of each channel should be connected to the positive (red) terminal of the speaker. Special care should be take when bi-wiring as phase becomes critical, (see page 12 for further details).

A note concerning placement

When installed in a domestic system at the base of a 99 Series equipment stack, the amplifier will be perfectly satisfactory provided there is sufficient ventilation.

If you are likely to use the amplifier for extended periods at extremely high volume levels, it may be advisable to install the units side by side in free air. To do this you will need 1 metre long AMPBUS cables which are available from your dealer or Quad. The method of connection remains unaltered. Please ask your dealer's advice.

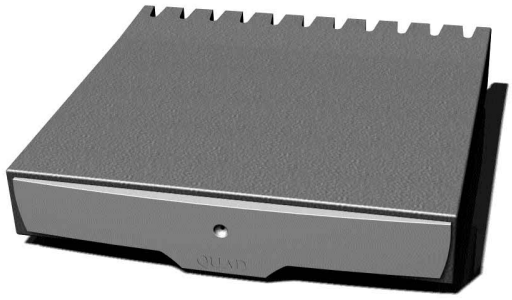
Connecting the 99 Stereo Amplifier to the Mains Supply

The power supply input is via an IEC mains connector and an appropriate mains lead is supplied. Connect the mains lead to the amplifier and then to the wall socket ensuring that the mains switch on both amplifier and wall socket are switched off. They should stay switched off until the unit is fully installed. See page 4 for further details.

Final Connections

After checking that all leads are correctly installed and the selector switch is correctly set, you can switch on the mains supply to the preamplifier and the amplifier.

OPERATING THE QUAD 99 POWER AMPLIFIER



Front Panel Indications

When used as part of a 99 system

When the Quad 99 preamplifier or AV processor is in STANDBY mode, the front panel indicator will light a steady red. When you activate the system the indicator will glow green and stay green during normal operation.

If the amplifier detects a fault such as a short circuit on the speaker cables, or if the amplifier overheats, the power amplifier will power down and the indicator will flash red. After thirty seconds the amplifier will 'try again'. If all is well, the amplifier will go into standby and the indicator light will glow a steady red. You may now bring the amplifier out of STANDBY.

If there is a persistent fault, when the amplifier 'tries again' the light will still flash red. If this should happen, switch off the unit at the mains and wait 30 minutes. Carefully check all the connections before switching on again. The amplifier should now go into STANDBY and the light will glow a steady red. If the red light still flashes, there is an internal fault and you should return the unit to your dealer for his attention.

When used with other units

When the amplifier is switched on, the front panel indicator will briefly light red and then glow steady green. It will stay green during normal operation.

If there is a fault, the amplifier will power down and flash red. After 30 seconds the amplifier will 'try again'. If all is well the light will glow green indicating normal operation. If the light still flashes red, switch off the unit at the mains and wait 30 minutes. Carefully check all the connections before switching on. The light should now indicate green indicating normal operation. If, however, the red light still flashes, there is an internal fault and you should return the unit to your dealer for his attention.

Running In your amplifier

The performance of the amplifiers tends to stabilise after a period of use. This is due to a number of factors associated with the physical and chemical properties of the components used. We recommend that the system be run with a music signal for several hours when it is first installed. Although the changes can be quite subtle in nature, we find that after a few days the

sound quality becomes smoother and more natural.

TROUBLESHOOTING

If you suspect that your amplifier is not operating properly, here are a few simple checks you should carry out before returning the unit to your dealer.

Before making any checks on system wiring, in particular AMPBUS cables, please ensure the amplifier is switched off and the volume control set at minimum.

If you are in any doubt as to the satisfactory operation of your Quad 99

SYMPTOM	POSSIBLE CAUSE
No front panel indication when power is applied.	Mains outlet faulty or not switched on. Mains plug fuse or mains cable faulty. The IEC plug has not been pushed in firmly enough. The rear panel fuse has blown.
The amplifier front panel indicator glows green but there is no sound from either speaker.	You have selected the wrong input channel on the power amplifier. Loudspeaker cables misconnected or faulty. There is no source connected to your preamplifier or the source has finished playing. AMPBUS connections have been poorly made. The cable between the amplifier RCA phono input and the preamplifier is faulty (non Quad 99 systems).
You are getting the same channel on both speakers. The channels are reversed.	You have selected the wrong input channel on the power amplifier. Loudspeaker cables misconnected. AMPBUS connections have been poorly made. RCA input cables misconnected (non 99 systems).
There is a large hum or other unpleasant noise from the loudspeakers.	Signal cable to the amplifier faulty (non Quad 99 systems). Faulty source equipment.
After playing for a while, the amplifier switches off.	Faulty loudspeakers or loudspeaker cable. Loudspeaker impedance too low and/or amplifier playing too loudly and overheating.
Every time the amplifier is turned on the fuse blows or the light flashes red.	Refer the matter to your dealer.

Quad Electrostatic Loudspeakers

The 99 power amplifiers are fully compatible with the Quad ESL-63, ESL-988 and ESL-989 loudspeakers. It should not be used with the earlier model ESL which could be damaged by signal peaks unless a protection circuit is fitted inside each loudspeaker – please contact Quad Electroacoustics for details.

Loudspeaker Phasing

If there is any doubt about the way the loudspeakers are connected, their phasing can easily be checked by playing a mono source, when the sound should appear to emanate from a point midway between the two loudspeakers. If this is indefinite, then the connections to one of the loudspeakers should be reversed. When correctly connected, the loudspeakers will give a definite centre sound source with more full bodied tenor and bass registers.

Headphones

Headphones will normally be used instead of loudspeakers and there are a number of suitable switch units available designed to enable the loudspeakers to be switched off when the headphones are plugged in. Most of these incorporate a simple attenuator circuit to permit operation at normal settings of the control unit volume control. Electrostatic or other types of headphones requiring a high level input should be operated in accordance with the manufacturer's instructions.

Series hi-fi equipment, please consult your appointed QUAD dealer.

SPECIFICATIONS - 99 STEREO POWER AMPLIFIER

Input Specifications

RCA Phono Input	
Input Impedance	33kΩ
Input Sensitivity (for max. output)	775mV
Frequency Response (±3 dB)	3Hz - 50kHz
Signal/Noise (ref 995mV input 'A' wtd) (ref. 100 watts output)	-110dB (20Hz-20kHz)
AMPBUS Input	
Input Impedance	10kΩ
Input Sensitivity (for max. output)	2.0V

Output Specifications

Max. Output into 8Ω	90 watts
Max. Output into 4Ω	120 watts
Distortion	
THD (at 70W Output, 1kHz)	less than 0.05%
(at 70W Output, 20kHz)	less than 0.05%
Stability Margin	Unconditionally stable
Amplifier DC Offset	less than 10mV
Dimensions (HxWxD)	70x321x310mm
Weight:	6.25Kg

SPECIFICATIONS - 99 MONO POWER AMPLIFIER

Input Specifications

RCA Phono Input	
Input Impedance	33kΩ
Input Sensitivity (for max. output)	775mV
Frequency Response (±3 dB)	3Hz - 50kHz
Signal/Noise (ref 995mV input 'A' wtd) (ref. 100 watts output)	-110dB (20Hz-20kHz)
AMPBUS Input	
Input Impedance	10kΩ
Input Sensitivity (for max. output)	2.0V

Output Specifications

Max. Output into 8Ω	150 watts
Max. Output into 4Ω	220 watts
Distortion	
THD (at 100W Output, 1kHz)	less than 0.05%
(at 100W Output, 20kHz)	less than 0.05%
Stability Margin	Unconditionally stable
Amplifier DC Offset	less than 10mV
Dimensions (HxWxD)	70x321x310mm
Weight:	6.5Kg