

QUAD 510

Single Channel Professional Power Amplifier

instruction book

QUAD 510 instruction book

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description

The Quad 510 is a single channel power amplifier designed for Broadcast, Recording and other applications in the audio industry. The Quad 510 provides up to 135 watts into almost any impedance between 2 and 75 Ω . It can be used to drive 100 and 70V line distribution systems as well as normal loudspeaker loads.

The isolated signal input is suitable for bridging 600 Ω lines.

The Quad 510 is highly versatile and can be regarded as a power building block. Since both input and output are isolated, it can be used in multiples to provide almost any power into any load.

The Quad 510 uses a development of the Current Dumping (feed forward error correction) circuit technique first used in the Quad 405 and for which Quad was granted a Queen's Award for Technological Innovation. Current dumping eliminates many of the problems associated with transistor amplifiers, and is covered by patents in several countries. In a current dumping amplifier there is in effect both a low powered very high quality amplifier and a high powered heavy duty amplifier. The low power amplifier controls the loudspeakers at all times, calling upon the high power section to provide most of the muscle. The small amplifier is so arranged – it carries an error signal – that provided the larger power transistors (the dumpers) get within the target area of the required output current it will fill in the remainder accurately and completely. The reproduced quality is solely dependent on the small amplifier which because of its low power can be made very good indeed. Current dumping offers advantages in terms of performance, reliability and serviceability. There are no adjustable components in a current dumping amplifier and hence no setting up. Field service normally requires nothing more than a screwdriver.

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installation

PACKING

Keep the packing in case the amplifier has to be sent back to Quad or the local Quad distributor for service.

MOUNTING

The Quad 510 is designed for standard 19 inch rack mounting. Adequate ventilation should be provided but it should not be necessary to use a cooling fan, even when using several amplifiers in the same rack.

A.C. INPUT

The Quad 510 is supplied for use on either 220-240 or 110-120V A.C. supplies and the A.C. voltage is clearly marked on the rear panel. A.C. voltage changes of 6% above or below the indicated range do not affect performance.

To change from 220 to 110V operation or vice versa the links on the primary of the A.C. transformer must be changed. See the circuit diagram on page 9.

A.C. input is via a standard CEE22-V plug and socket. The amplifier chassis must be connected to ground via the A.C. supply cord. A simple retaining clip ensures that the A.C. connector cannot be pulled out by accident.

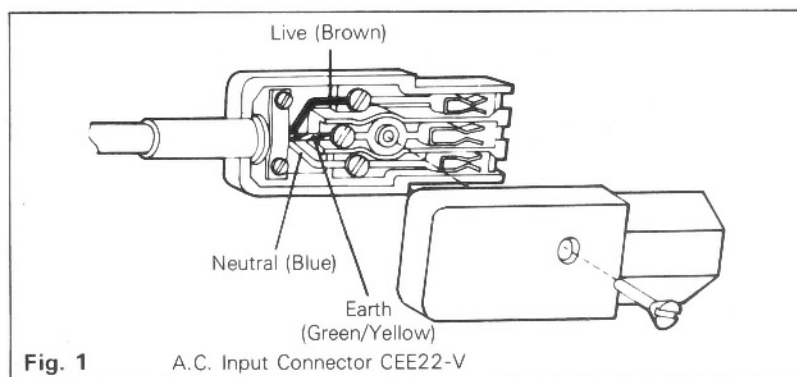


Fig. 1 A.C. Input Connector CEE22-V

FUSE

The A.C. supply fuse is located next to the A.C. connector. Correct rating for 220V operation is T2.5A and for 110V operation T5A. The A.C. connector must be removed to gain access to the fuseholder.

OUTPUT CONFIGURATION

The Quad 510 is designed to operate into any load between 2 and 75Ω , (see curves on page 8). Decide upon the output configuration, select the appropriate plug-in card from the range supplied and plug it into the slot in the back of the amplifier. A card must be inserted for the amplifier to operate.

If more power is required, multiples of Quad 510's can be used with inputs wired in parallel and outputs wired in series, e.g. four 510's set to 17Vrms (2Ω) will provide 68Vrms into a load of 8Ω , or roughly 550 watts. No special precautions are necessary with regard to ground loops etc., since both input and output of the 510 are isolated. However, when connecting multiple 510's the total terminal voltage should not exceed 1kV peak.

CONNECTORS

The Quad 510 is normally fitted with XLR type connectors. These are wired either to I.E.C. or N.A.B. standards and clearly marked on the back panel.

Input –	via 'XLR' type chassis mounted socket	Output –	via 'XLR' type chassis mounted plug
I.E.C.	Pin 1 – Blank Pin 2 – Line A – Hot Pin 3 – Line B – Cold	I.E.C.	Pin 1 – Blank Pin 2 – Line A – Hot Pin 3 – Line B – Cold
N.A.B.	Pin 1) – Line B – Cold Pin 2) Pin 3 – Line A – Hot	N.A.B.	Pin 1) – Line B – Cold Pin 2) Pin 3 – Line A – Hot

PHASE

Input and output are in phase.

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operating instructions

OPERATION

The amplifier is switched on by the Power switch on the front panel. The green POWER indicator will light.

Gain is adjusted by the front panel control which is fitted with a simple locking device. The gain is at maximum with the control rotated fully clockwise. The 0dBm position is accurately calibrated before the amplifier leaves the factory.

The INPUT and OUTPUT indicators will light when signal is present and provide a useful diagnostic aid particularly if numbers of amplifiers are mounted in the same rack. Intensity of the Input and Output indicators is modulated by the programme.

Both INPUT and OUTPUT indicators lit indicates signal present at the amplifier output. Note however that the Output indicator will still light if no output configuration card is plugged in.

INPUT lit but OUTPUT extinguished indicates a fault within the amplifier.

Both INPUT and OUTPUT extinguished indicates no signal present at the input terminals.

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service

SERVICE

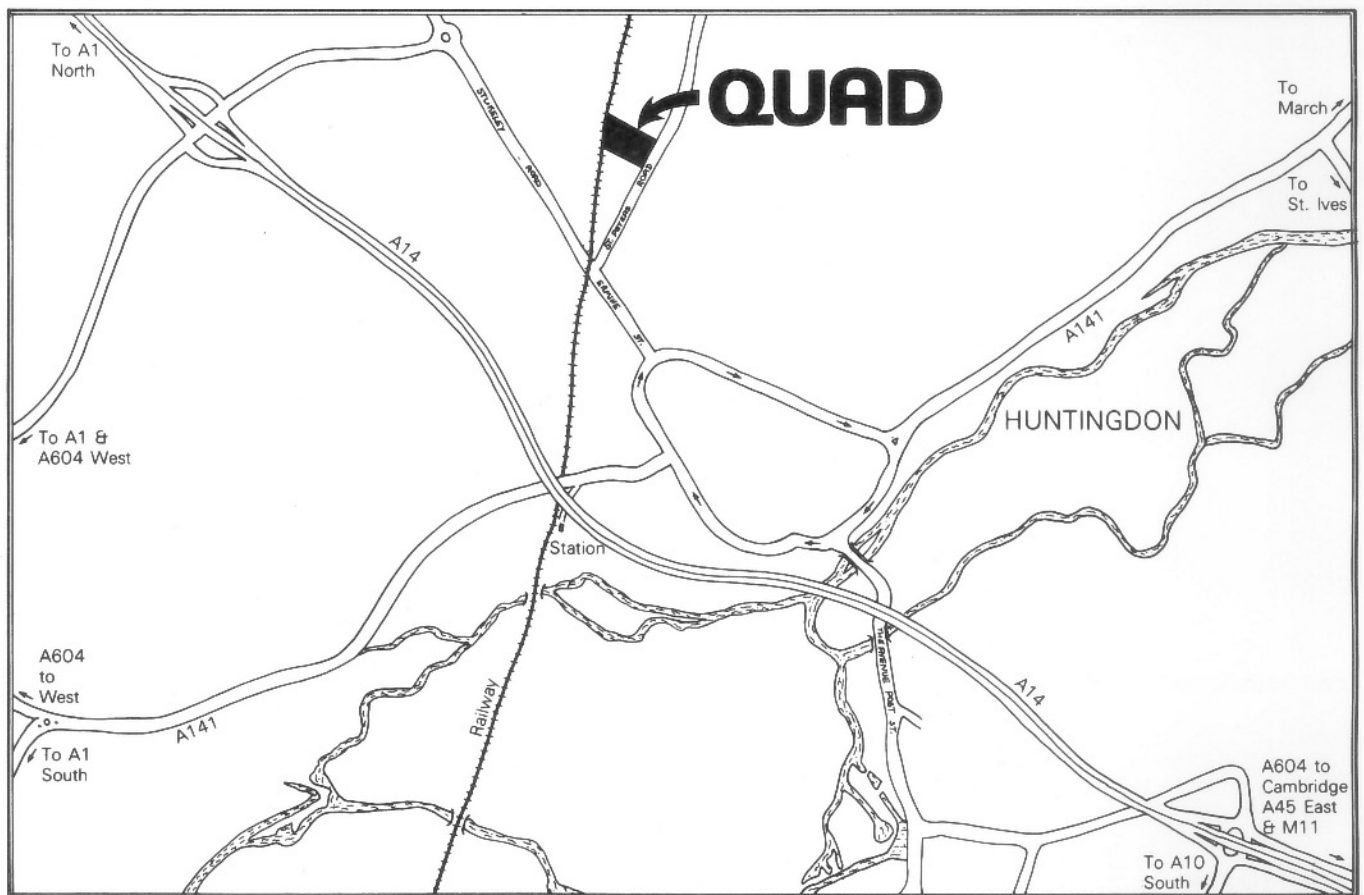
This Quad amplifier has been carefully tested and inspected during manufacture and before packing and delivery to ensure that it will provide many years of reliable service. It has been designed to be reliable and also easy to service if a component should fail.

The Quad 510 can be serviced in the field by replacing a complete amplifier module. This requires a posidrive screwdriver only. No adjustment or setting up is required.

Amplifier modules should be ordered as such, quoting the amplifier serial number. Individual components should be ordered by their circuit diagram reference.

If the amplifier has to be returned to the factory or distributor, the original packing should be used.

Quad offers same-day service from Monday to Friday except for bank holidays. The map below shows where to find us. Please call 0480 52561 to tell us that you are coming.



GUARANTEE

This power amplifier is guaranteed against any defect in material and workmanship for a period of twelve months from the date of purchase.

Within this period we undertake to supply replacement parts free of charge provided that failure was not occasioned by misuse, accident or negligence. Freight costs are not covered unless by local agreement.

Within the U.K. the guarantee offered with this equipment does not limit the customer's existing statutory rights. A separate guarantee card is not supplied with your Quad unit. The guarantee begins on the day on which the unit is delivered.

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circuitry

QUAD 510 SPECIFICATION

Frequency Response: Ref 1kHz – 0.5dB at 20Hz and 20kHz

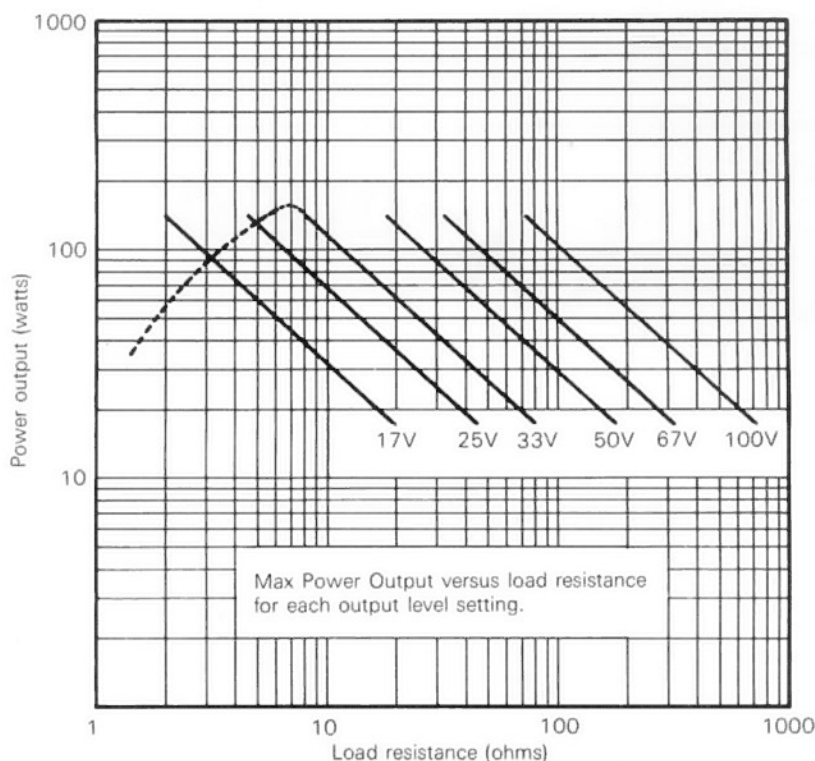
Power Response: Ref 1kHz –3dB at 25Hz and 30kHz
0dB at 40Hz and 20kHz

Power Output: Power v distortion for various frequencies with continuous sine wave into minimum recommended load.

40Hz any level up to 135 watts < 0.03% Dtot

1KHz any level up to 135 watts < 0.01% Dtot

20KHz any level up to 135 watts < 0.1% Dtot



Load Impedance: Minimum load impedance for various output levels. Note the output configuration cards are labelled with voltage levels.

2Ω	17Vrms	18Ω	50Vrms
4.5Ω	25Vrms	32Ω	67Vrms
8Ω	33Vrms	72Ω	100Vrms

Output Regulation: Better than 10% for load changes from open circuit to minimum recommended value.

Signal Input Level: 0.5Vrms at maximum gain for 135 watts into minimum recommended load.

Input Impedance: 20KΩ in parallel with 50H.

Hum and Noise: –115dB unweighted ref. full power (15.7kHz measurement bandwidth)

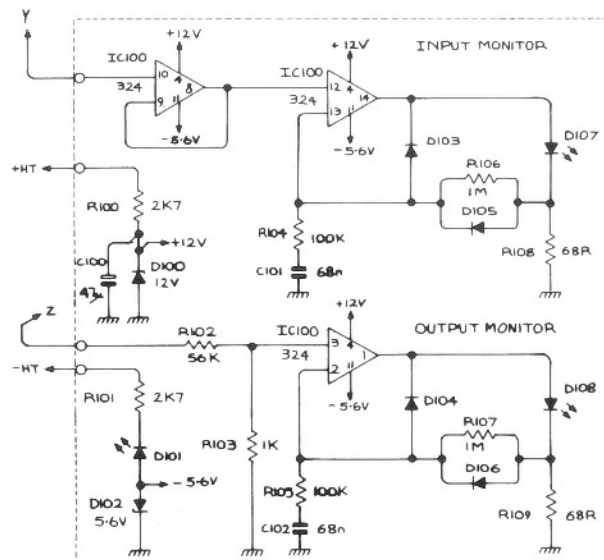
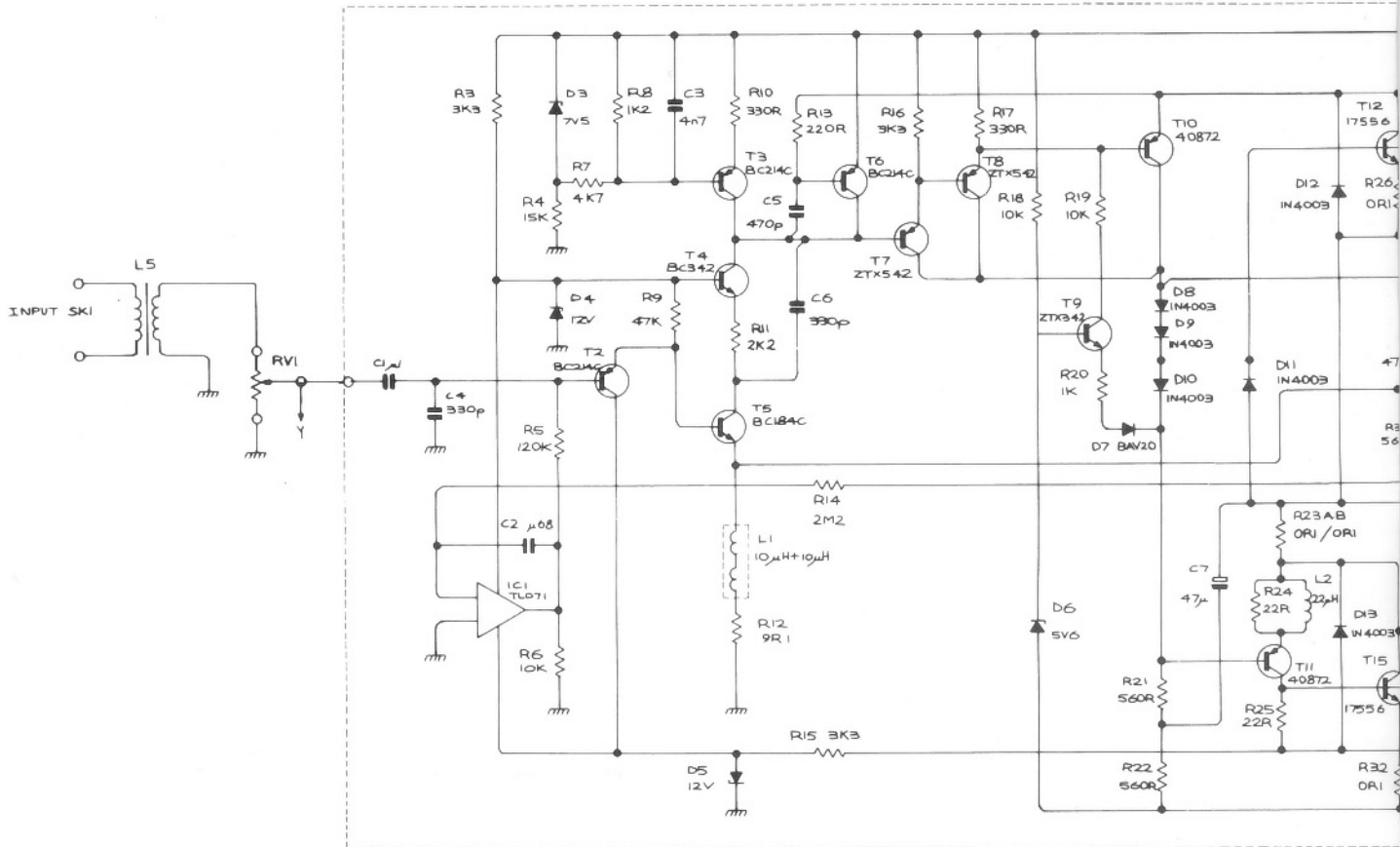
Stability: Unconditional.

A.C. Input: 110-120V, 220-240V 50-60Hz 20-40 watts

Protection: The amplifier is fully protected against short circuit output or input overload

Weight: 13Kg

Dimensions: Width 482.6mm (19"), Height (2U) 88mm (3½"), Depth 320mm (12½")



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circuitry

