

SECTION 12

VIDEO DISTRIBUTION AMPLIFIER AM4/512

General Description

The AM4/512 is a mains-operated video distribution amplifier having 0-dB gain. It can handle coded colour signals on the 405/525/625 line standards. It has three outputs at standard level into 75 ohms from a 75-ohm source. The input impedance is high. It replaces the AM4/507.

A plug in chassis CH1/12A is used with printed wiring so that the amplifier can be accommodated on mounting panels of the PN3/23 type.

General Data

Voltage gain	0 dB \pm 0.2 dB.
Number of outputs	3.
Maximum difference in gain between any 2 outputs terminated in matched resistors	0.1 dB.
Nominal output level	1 V peak-to-peak across 75 ohms.
Overload point	2.8 V peak-to-peak sine wave at 10 kHz. 2.0 V peak-to-peak sine wave at 5.5 MHz.
Amplitude-frequency response	\pm 0.1 dB from 3 Hz to 7 MHz at nominal level with all three outputs terminated.
50-Hz square wave response	1% sag on a 50-Hz symmetrical square wave.
Low frequency bump	<14% overshoot for a d.c. step signal on the input fed through any single CR circuit. Nil overshoot for a d.c. step signal on the input.
Pulse and bar response (625 lines)	<0.5% <i>k</i> factor for 10 amplifiers in cascade (excluding low-frequency bar).

Input impedance	10 k Ω \pm 5% in parallel with 30 pF \pm 10% from 1 Hz to 1 MHz. About 3.3 k Ω in parallel with 20 pF at 5.5 MHz.
Output impedance return loss figure (with respect to 75 ohms)	> 40 dB from 10 kHz to 3 MHz.
Separation between outputs	> 60 dB at 10 kHz. > 43 dB at 3 MHz. > 35 dB at 5.5 MHz.
Permitted d.c. at input	The d.c. at the input terminal must not exceed \pm 6 V.
Permitted a.c. at input	Peak-to-peak a.c. excursion at the input not to exceed 6 V.
D.C. at output	Within \pm 0.1 V for ambient temperature range 20°—30°C. Within \pm 0.2 V for ambient temperature range 10°—40°C.
Hum on output	<0.2 mV peak-to-peak.
Mains bump	Negligible.
Non-linearity or picture signal distortion factor	<0.2%
Differential phase	Less than 0.15° at 4.43 MHz.
Operating temperature	10°—40° C.
Change of gain with temperature	Negligible.
Power requirement	210—250 V r.m.s., 50 Hz.

Instruction V.7
Part 4, Section 12

Current consumption About 43 mA at 240 V.

Weight 2 lb 1 oz.

Index Pegs 9 and 26.

Circuit Description

General

The circuit of the amplifier is given in Fig. 12.1. It is very similar to that of the AM4/511 and the functions of the various stages are the same. Note that the feedback circuit has been modified so that

the voltage-gain stage TR3 has a gain of 6 dB instead of 12 dB, and the input stage and bias arrangements have been modified to handle an input signal of 1 volt peak-to-peak instead of 0.5 volt.

Power Supply

The Zener diode ZD2 provides the 9-volt reference for the transistor TR8, and the 23 volts between rails is split by ZD1 and R19 so that one rail is at +9 volts relative to earth and the other rail is at -14.

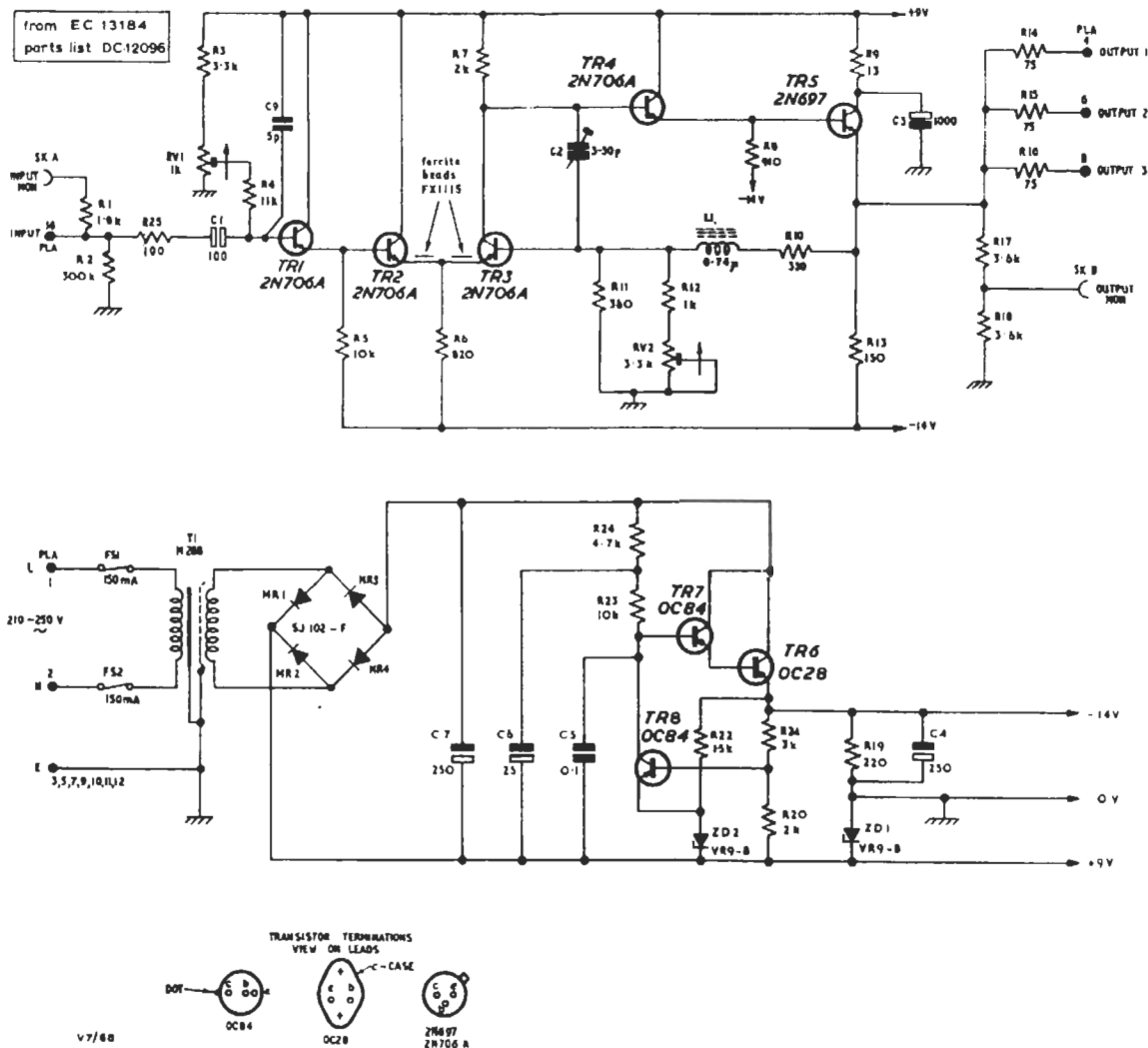


Fig. 12.1 Circuit of the AM4/512

Test Procedure

Alignment should be carried out as described for the AM4/511 except that the 6-dB loss-pad is not required in front of the amplifier.

Power Supply Voltages

<i>Point of Measurement</i>	<i>Avo 8 Range</i>	<i>Maximum Voltage</i>	<i>Minimum Voltage</i>
† Across C7	100	31.5	28.5
C7 +ve side	10	9.9	8.9
C8 -ve side	25	14.1	12.7
TR1 emitter	2.5	-0.1	0
TR2 emitter	2.5	-0.82	-0.68
TR4 emitter	2.5	0.8	0.7

All voltages, except that marked †, are to be measured with respect to chassis. The measurements should be made with the equipment lined up and terminated, and with a mains input of 240 volts.

Installation and Use

The precautions described for the AM4/511 should be observed, except as regards equaliser loss, where they do not apply. The permitted d.c. at the input is ± 6 volts.

References

- D.D. Specification 8.94(62).
- D.D. Technical Memorandum 8.132(63).

AIB(R) 9/67