

THREE CHANNEL VIDEO PROCESSING AMPLIFIER AM1M/560

Introduction

The AM1M/560 accepts the three non-composite outputs from the head amplifiers of a colour slide scanner or telecine apparatus and processes them to correct for the afterglow and aperture loss effects of a flying spot scanning system. Each channel also has gamma and blanking amplifiers. The blanking amplifiers provide white clipping and also facilities for gain and lift control, adjustment being local or from a remote point.

A test waveform generator forms part of the AM1M/560 and permits alignment to be checked using a linear sawtooth or lift waveform. An external test waveform e.g., preset law staircase, may be selected via the test waveform generator.

The amplifier consists of the following units mounted in a PN3/23 chassis:—

Test Sawtooth and Lift Generator	GE4/532
Equaliser Amplifier	AM1/561
Equaliser Amplifier	AM1/562
Gamma Master Amplifier	AM19/505
Gamma Slave Amplifier	AM19/506
Blanking Amplifier	AM1/563
Slave Blanking Amplifier	AM1/564

General Specification

Inputs

Three, non-composite	0.7 V p-p positive going
External Test waveform non-composite	0.7 V p-p
Mixed Synchronising Pulses	2.0 V
Mixed Blanking Pulses	2.0 V

Input Impedance (all inputs) 75 ohms

Outputs (non-composite processed video across 75 ohms) 0.7 V p-p

Output Impedance (all outputs) 75 ohms

Afterglow Correction (six sections per channel) 6 dB max per section

Correction Time Constants	0.2 μ s
	0.4 μ s
	0.9 μ s
	2.0 μ s
	4.0 μ s
	9.0 μ s

Aperture Correction (per channel) 12 dB max boost at 7 MHz

Gamma Correction

Down to 3.5% of input signal level	power law of 0.4
Black-level Gain	18 dB max

Blanking Amplifier

Lift Range	+30% to -50%
Gain Range	± 3 dB
White Clipping Level (w.r.t. blanking level)	700 mV
Black Clipping Level (w.r.t. blanking level)	0 mV

Mains Input

240 V $\pm 10\%$,
170 mA, 50 Hz

Operating Temperature Range

10°C to 45°C
ambient

Weight

24 lb fully equipped

The following controls are mounted on the front panel:—

- Test Waveform Selection switch
- Test Waveform Lift control
- Afterglow Correction (preset)
- Aperture Correction
- Master Lift
- Master Gain
- Test Waveform/Normal switch
- Short Output switch
- Local/Remote switch

The following controls may be operated remotely:—

- Master Lift
- Master Gain
- Short Output switch
- Select Test Waveform switch

General Description

A block diagram is given in Fig. 1. The three input signals pass through identical channels, the red and blue channels slaving on the green channel for power supplies and for lift and gain controls.

The test signals generated by the GE4/532 are switched into circuit in place of the input signals by

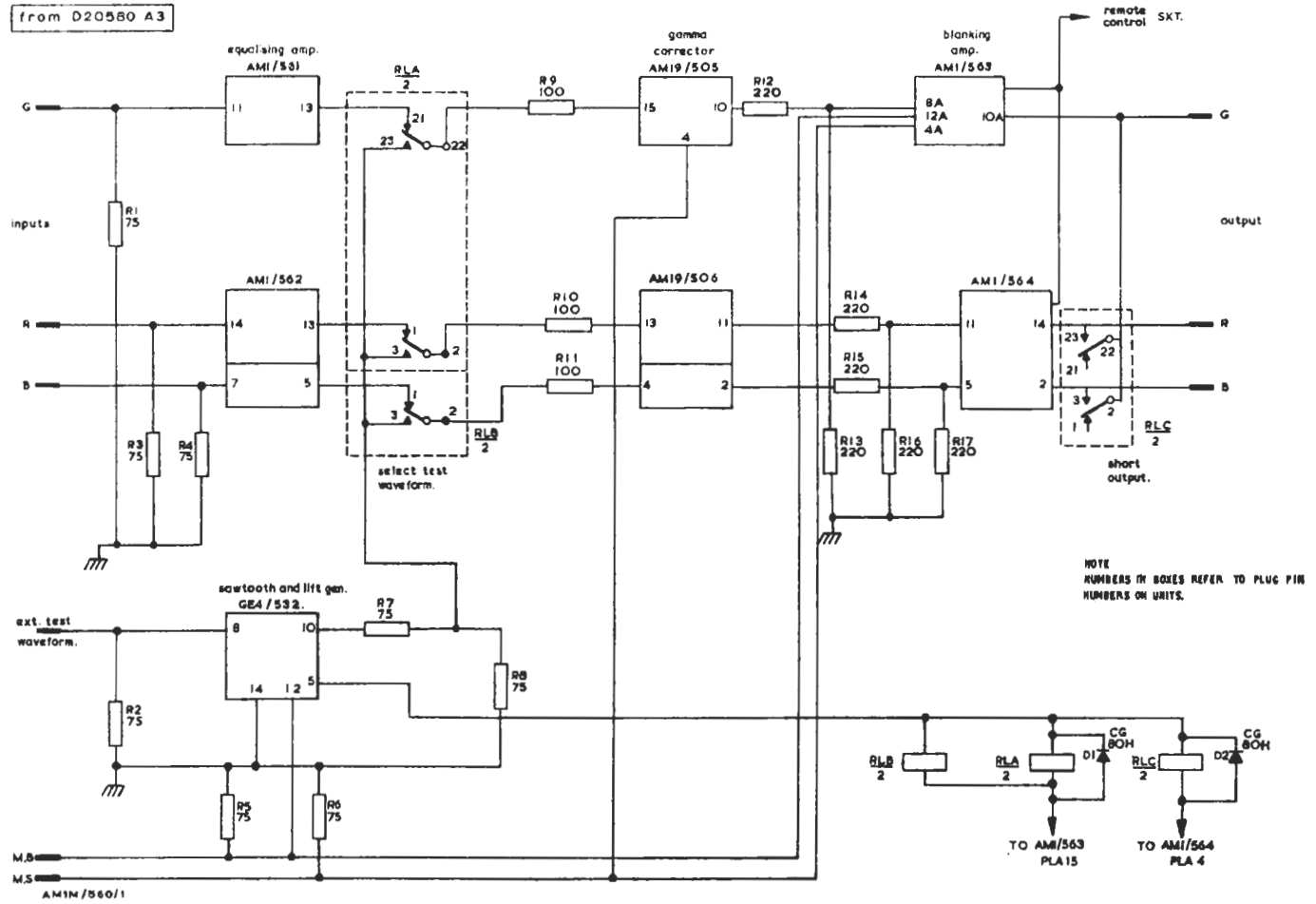


Fig. 1 Block Diagram of the AM1/560

the operation of RLA and RLB, controlled by a switch on the front panel of the AM1/563. The test signal itself (either sawtooth, lift or an external signal) is selected by means of a push button switch on the front panel of the GE4/532.

The afterglow preset controls are adjusted visually with the unit installed in a colour slide scanner and while viewing a de-streak slide.

The three outputs can be connected together as a test facility for checking the following stages of a colour channel.

Maintenance

Routine maintenance is not required but the following checks may be made occasionally or if the performance becomes suspect.

1. Set lift and gain controls to mid range position, turn all afterglow correctors to zero and switch in the internal sawtooth. With an oscilloscope probe examine the waveform at the output monitor point of the green gamma amplifier. A gamma corrected sawtooth of 1.4 volts p-p should be obtained.

Using the oscilloscope with differential facility, adjust the three controls on the red and blue gamma amplifiers so that the sawtooth waveforms through these channels match the green sawtooth.

2. Switch the internal sawtooth into circuit, set the gain and lift controls (AM1/563) at approximately mid position and examine the waveform at the green output terminal using an oscilloscope with a 75-ohm $\pm 0.2\%$ termination across its input. The display should be a gamma-corrected sawtooth, properly blanked and with an amplitude of 700 mV and zero lift.

Using the differential facility on the oscilloscope, adjust 1R16 and 2R16 on the AM1/564 so that the red and blue signals match the green.

3. With the internal sawtooth test signal switched into circuit the red, green and blue outputs should now be identical. Note that when making this test the channels must be terminated at the oscilloscope terminals with 75 ohms $\pm 0.2\%$.
4. Join the three video inputs together and repeat test 3 but using an external source of non-composite, but synchronous, sawtooth fed to the junction of the three inputs. The three outputs should again be identical.

References

1. Designs Department Specification No.8.296(68)

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