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<u>VA-363</u>

VIDEO AMPLIFIERS

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DESIGNED AND MANUFACTURED IN AUSTRALIA

VA-363 VIDEO AMPLIFIERS INSTRUCTION BOOK

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WARNING

OPERATION OF ELECTRONIC EQUIPMENT INVOLVES THE USE OF VOLTAGES AND CURRENTS WHICH MAY BE DANGEROUS TO HUMAN LIFE. OPERATING PERSONNEL SHOULD OBSERVE ALL SAFETY REGULATIONS. DO NOT CHANGE COMPONENTS OR MAKE ADJUSTMENTS INSIDE THE EQUIPMENT WITH POWER ON UNLESS PROPER PRECAUTIONS ARE OBSERVED. NOTE THAT UNDER CERTAIN CONDITIONS DANGEROUS POTENTIALS MAY EXIST IN SOME CIRCUITS EVEN THOUGH POWER CONTROLS ARE IN THE OFF POSITION.

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GENERAL DESCRIPTION

The VA-363 is a high performance AC powered video amplifier package containing two separate amplifiers. The VA-363 is designed to be used to adjust the gain and frequency response of video signals at a central location.

Major features of the VA-363 amplifiers are:

- * Gain Reserve
- * Longitudinal Hum Reduction
- * Cable Equalization
- * Four Outputs
- * Terminating input

Gain and cable equalization controls are situated on the front panel and the longitudinal hum reduction adjustment is an internal preset potentiometer.

The cable equalizer characteristics are preset to compensate for a maximum of 300 metres of Belden 8281 co-axial cable. Internal controls on the equalizer sub-board allow this to be changed to suit different cable types.

The VA-363 is housed in an IRT one rack unit high 19" rack mounting chassis.

SPECIFICATIONS

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Input Impedance	Terminating into 75 ohms, DC Coupled to amplifier.		
Input Signal Range	0.7 to 2.0 V P-P video signal		
Input Connector	BNC.		
Outputs	Four 75 ohm sourced DC coupled.		
Maximum Output	2.0 V P-P video.		
Output Connectors	BNC.		
Overall Gain	+/-3dB minimum as set by front panel control.		
Frequency Response	+/-0.1dB to 10MHz.		
Differential Gain at 4.43MHz	Less than 0.2% at 1V P-P.		
Differential Phase at 4.43MHz	Less than 0.2 deg at 1V P-P.		
Longitudinal Hum Reduction	With input grounds isolated better than 40dB at 50Hz. Adjustable by internal preset control.		
Cable Equalization	Continuously Variable front panel control. Equalizing up to 300m of 75 ohm cable.		
Input Power	220-260V A.C. 50Hz 20VA.		
Mechanical	IRT 19" rack mounting chassis with input output and power connections on the rear panel		
Dimensions	480mm x 230mm x 44mm		

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CIRCUIT DESCRIPTION

The VA-363 contains two identical amplifier circuits powered from a single +/-12V power supply sub-board type AP-712.

<u>Video</u> amplifier

Incoming video is terminated in 75 ohms consisting \mathbf{of} а network of two resistors (R21,22 and R23,24) and a parallel 250 ohm potentiometer. This provides a 75 ohm termination to the incoming video signal as well as providing a variable level video the fixed gain video amplifier circuit feed to following. The fixed gain video amplifier consists of a DC coupled differential transistor input stage Q1 and Q2, followed by a voltage amplifier Q3 which provides the drive for the complementary emitter follower output stage Q4 and Q5. Feedback from the output to the inverting input of the overall amplifier via R13 is used to set the gain of the amplifier. The gain being set by the ratio of R13 to the sum of R7 and RV3. With RV3 included in the gain setting circuit amplifier, changing its value by means \mathbf{of} theof a of resistors and capacitors, the gain of network \mathbf{the} amplifier can be changed with frequency and can thus compensate for coaxial cable losses. By adjustment of RV3 the amount of equalization can be varied to compensate for different lengths of The equalization network is factory set for Belden cable. 8281 cable. To compensate other types of cable with different loss characteristics the network will need to be adjusted to suit.

Longitudinal hum reduction is achieved by raising the input co-axial ground circuit above the equipment ground and feeding a variable amount of this signal to the feedback input of the amplifier. In this way the "common mode" gain of the amplifier to hum <u>signals</u> present on the incoming video co-axial cable is set so that this signal is canceled in the differential amplifier. Since this is only necessary at low frequencies C2 is included in the ground circuit to improve the high frequency response of the amplifier.

The overall frequency response of the amplifier is optimised by adjustment of C4. Since the D.C. voltage at the amplifier output is set to $0 \ V +/- 100 \ W$ (adjustable by RV4) the output signal is D.C. coupled to resistors R18 and R19 which set the output impedance of the amplifier to 75 ohms.

Power Supply

An AP-712 power supply sub-board is used to power the VA-363 amplifiers. A.C. voltages from T1 are rectified by diode bridges D1 to D4 and D5 to D8 ,filtered by C1 and C2 and regulated to +12V and -12V by three terminal regulators U1 and U2.

INSTALLATION

The front panel of the VA-363 contains the power switch, fuse fail indicator, a green power on LED indicator powered from the +12V supply, and the gain and equalization controls of the two amplifiers.

The rear panel of the VA-363 contains the A.C. power cord, the input and output co-axial connectors for the two amplifiers. The input connector is insulated from chassis ground to allow the hum reduction circuit to work.

The gain and cable equalisation for each amplifier can be set as required with the amplifier in the normal operating position. The hum reduction circuit is factory adjusted on a test signal, should it be necessary to adjust this the top cover of the unit will have to be removed to gain access to the board mounted controls.

VOLTAGE TABLE

Typical voltage readings as taken with a high input impedance volt meter.

U1 U2	Voltage "	IN +16.37 OUT +12 7 IN -16.37	7 7 (+/-0.3∀) 7
	•	OUT -12	/ (+/-0.3∀)
	Emitter	Base	Collector
Q1	-0.77	٧O	+11.3V
Q2	-0.77	۷0	+12V
ର3	+12¥	+11.3V	+17
Q4	+0.15V	+0.7V	+127
Q5	-0.1V	-0.7V	-12V

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