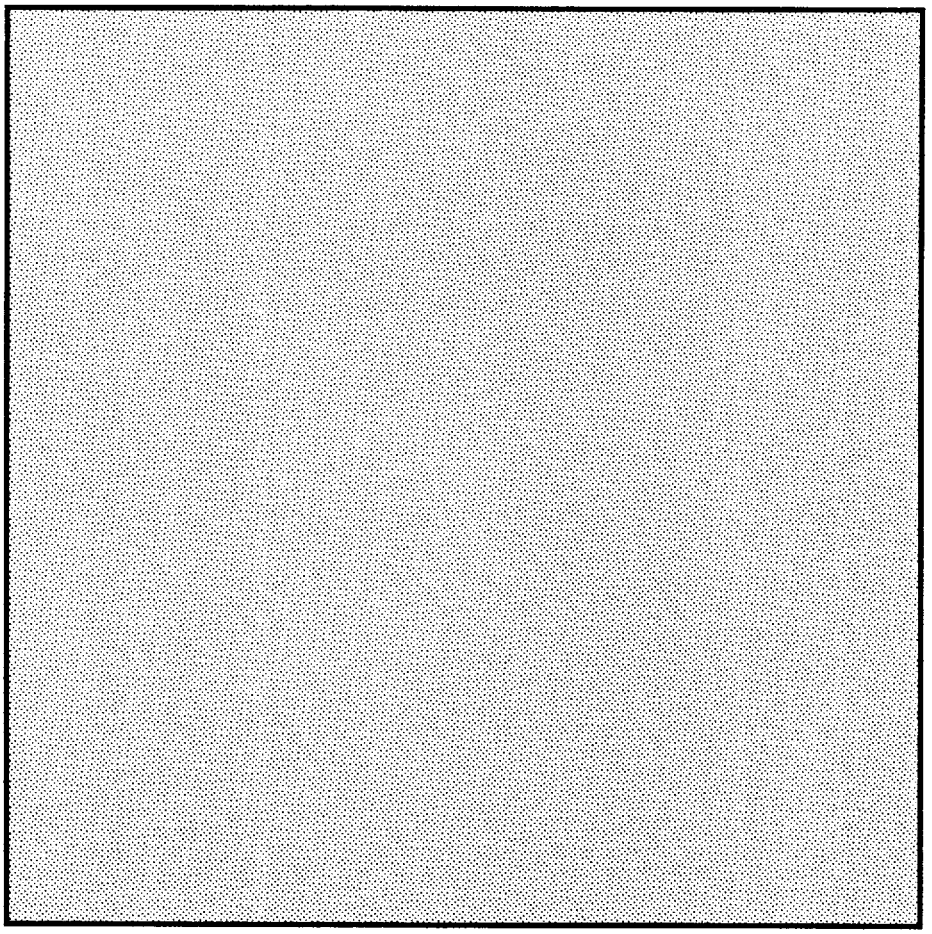
10 Output VDA

Service Manual



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PESA

Notice to Customers

As of January 1, 1990, Pesa Electronica, S.A. acquired 3M's "Broadcast and Related Products" division. Pesa Industries, Inc., a new Pesa Company, located in the acquired 3M facilities in Huntsville, Alabama will continue factory service, support, and customer training for all products produced by Pesa Industries Inc.

This manual was produced prior to Pesa Industries Inc. acquisition and some pages may make reference to 3M Company. This product manual is made for the purpose of referencing the technical information of the product and does not represent or imply any liability to 3M Company.

Pesa Industries Inc. will honor all service contracts and warranties issued prior to January 1, 1990 on equipment produced by the Huntsville, Alabama location.

Questions or concerns can be answered by contacting any of the addresses below.

West Coast

PESA America Inc.
The Centre at Burbank Airport
2550 Hollywood Way, Suite 111
Burbank, CA 91505

TEL. 818-563-4566
TEL. 800-323-7372
FAX. 81 8-563-4568

East Coast

PESA America Inc.
1373 Veterans Highway, Suite 22
Hauppauge, NY 11788

TEL. 516-360-7382
TEL. 800-328-1008
FAX. 51 6-360-7965

Customer Service

PESA America Inc.
2102 West Ferry Way
Huntsville, AL 35801

TEL. 205-883-7370
TEL. 205-880-0795
FAX. 205-882-3294

EQUIPMENT WARRANTY

PESA warrants the 10 Output VDA against defective workmanship or materials for a period of one year from the date of purchase.

During the applicable warranty period, parts will be replaced at no charge. Labor for repair or replacement of defective parts will be performed at no charge at the factory or authorized service center.

This warranty does not include shipping damage, or damage caused by abuse, neglect, tampering by unauthorized personnel, damage inadvertently caused by the user, preventative maintenance, or any equipment or part thereof whose serial number has been removed or defaced.

THE SOLE RESPONSIBILITY OF PESA SHALL BE TO REPAIR OR REPLACE THE EQUIPMENT IN ACCORDANCE WITH THIS WARRANTY. PESA SHALL NOT BE OTHERWISE LIABLE OR RESPONSIBLE FOR ANY LOSS, INJURY, OR DAMAGE, DIRECT OR CONSEQUENTIAL, RESULTING FROM THE FAILURE OR INABILITY OF THE EQUIPMENT TO PERFORM.

SOFTWARE:
ALL SOFTWARE INCLUDING ANY REVISIONS IS PROVIDED ON AN "AS IS" BASIS WITHOUT WARRANTY.

PESA America Inc.
2102 West Ferry Way
Huntsville, AL 35801

Ordering Assistance, Service & Inquiries

PESA
PESA America Inc., Bldg #3
Huntsville, AL 35801

(205) 880-0795

PESA

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SPECIFICATIONS

INPUT	Impedance	Looping	100K Shunted by 24PF
	Connectors	2, BNC	
	Level	1VP-P, 2VP-P without clipping	
	Return Loss (Power ON)	3.58 MHZ	42DB
		4.43 MHZ	40DB
		5.0 MHZ	38DB
	(Power OFF)	5.0 MHZ	30DB
OUTPUTS	Number	Ten	
	Connectors	BNC	
	Impedance	Source Terminated	75 Ohms
	Return Loss	3.58 MHZ	47DB
		4.43 MHZ	46DB
		5.0 MHZ	45DB
	Coupling	Direct	
	DC Offset	Less than 20 millivolts (Fixed)	
	Isolation (Output to Output)	3.58 MHZ	43DB
		4.43 MHZ	41DB
		5.0 MHZ	40DB
	Level	1VP-P, 2VP-P without clipping	
TRANSFER	Gain	Front Access Pot, Unity ±3DB	
	Freq. Resp.	±0.1DB to 7 MHZ	
		±0.2DB to 12 MHZ	
		+0.2DB, -0.8DB to 20 MHZ	
		20 MHZ, continuous roll off	
	Diff. Phase	10-90% (NTSC)	0.15°
	Diff. Gain	10-90%	0.15°
	Diff. Phase	12 1/2 - 87 1/2% (PAL)	0.18%
	Diff. Gain	12 1/2 - 87 1/2%	0.18%
	K Factor (2T)		0.5%
	Tilt (50,60 HZ Field; or Line)		0.5%
	Bounce (APL 10-90%)	1st Overshoot	4% (Returns to 0.5% in 3 seconds, no second overshoot.)
	Hum & Noise	(P-P Signal to RMS Noise, Weighted	Per CCIR STD.M) -75DB
		4.2 MHZ Lo Pass	-72DB
		15 MHZ Bandwidth	-68DB
	Gain Stability		1%
	Delay (Input to Output, Unity Gain, Flat Response)		21NS (AVE.)
	Amplifier to Amplifier Isolation		66DB to 5 MHZ
	Chrominance/Luminance Delay		10NS
	Chrominance/Luminance Amp Error		0.5%
MECHANICAL, POWER AND ENVIRONMENTAL	Input		1, Rear Panel
	Output		10, Rear Panel
	Frame (Holds 10, 10 Output Amps)		19"W x 5 1/4"H x 10"D
	Card		4.5H x 6.5D x .9W
	Voltages		±14 Volts
	Current		160 MA
	Power		4.5 Watts
	Temperature		0 to 50°C Ambient
	Humdiity		To 90% Non-Condensing

INSTALLATION

Receipt Inspection

The VDA Frame Assembly was inspected, tested and adjusted before leaving the factory. Upon receipt, inspect the equipment for any shipping damage. If any damage is deetcted, notify the carrier immediately. If everything is normal, proceed with installation and checkout.

Location

The system may be used anywhere power is available. Units are separated in the system, but should be located as close as possible to shorten interconnecting cables. Forced air cooling is not required; however, sufficient space must be allowed for the free circulation of air. Installation should be made where the ambient temperature will not exceed 50 degrees C inside the equipment rack. When used a part of a larger system where interconnecting cables are supplied, a rack layout drawing is usually included. While it is not a requirement to follow this layout, it will assure that the cables supplied will be of the proper length.

Rack Mounting

The VDA frame is rack mounted in a standard 19" equipment rack. Sufficient space must be allowed behind the rear panel for the coaxial and power cables. Mount the frame in the equipment rack using appropriate machine screws and nylon washers to avoid damaging paint.

MAINTENANCE

Replacement Parts

Only parts of the highest quality have been used in the design and manufacture of the VDA system. If the inherent stability and reliability are to be maintained, replacement parts must be of the same quality. A replacement parts list is included in this manual. When replacing parts, avoid excessive solder on the circuit board. Always make sure the solder does not short two circuits together. It is good practice to use a solder removal device when removing components from the printed circuit board. Be sure the replacement part is identical to the original, and is placed in exactly the same position with the same lead lengths.

CAUTION

MOS devices are subject to damage by electrostatic discharge. Insure that all tools and persons handling this device are properly grounded.

Factory Repair Service

To expedite repair of a unit, please observe the following procedures:

Call First

If you are having problems with a unit (in Warranty or Out of Warranty) call Magnetic Audio/Video Products Division (612) 733-7141 and request assistance from Technical Service Department.

In Warranty

If in Warranty, you will be issued a Return Authorization Number and Shipping instructions.

Out of Warranty

If Out of Warranty, our Service Department will furnish you with FREE telephone-troubleshooting aid. If repairs cannot be made by telephone then a Return Authorization Number will be issued to you and service charges explained. Your Purchase Order Number will be required to expedite repair and return of your equipment.

10 OUTPUT VDA CARD

Two versions of this amplifier are available. One is high impedance looping input (10L) and the other is 75 ohm input, floating ground, for hum rejection (10T).

Both amplifiers use on-card voltage regulators. The voltage regulators consist of three terminal positive and negative regulators, input fuses, output clamp diodes, and associated bypass capacitors. A front panel LED serves to indicate voltage level. A 30% drop in the combined plus and minus 12 volts causes the LED to dim considerably or go out. The zener diode D7 sets the threshold at which the LED drops out.

The output stages of the two versions are identical. The inputs differ slightly in that the 10L grounds one side of the coax input connectors and uses C5 to bootstrap the bias network R2 and R3. R3, R6 and R7 set the amount of bootstrap or feedback signal.

The 10T version applies any signal present on the coax shield to the other input of the differential amplifier. When the proper balance is set by R6, the signal on the coax shield is greatly attenuated through Z1. Thus, no common mode voltage is present at the high end of the gain control R17.

From this point both versions are the same. Z2 drives an output stage consisting of Q1 and Q3 which drive Q2 and Q4. R42 sets the bias current through Q2 and Q4. Feedback from the collectors of Q1 & Q2 and Q3 & Q4 plus the temperature compensation by diodes D1 thru D4 provide a very stable current through Q2 and Q4. Signal from the output is feed back to Z2 through two paths, R26 & R27 and C25 for AC feedback and through R25 for DC feedback.

Adjustment of the three variable capacitors allows frequency response control in several areas. Since the bandwidth is so wide, response may be adjusted in the 4 and 8 MHZ region, and the region above 12 MHZ. The area controlled by each capacitor overlaps and inter-reacts with the others. A sweep signal from 50KHZ to 25MHZ should be used for proper adjustment. The controls can be used to provide a small amount of cable equalization but they are not intended for that purpose. Amplifiers so adjusted are not interchangeable since each will probably be set for a different length of cable.

10 OUTPUT VDA CARD (Cont.)

The plug in card may be removed or installed with power on without damaging the amplifier.

Since the amplifiers dissipate heat, care should be taken to allow natural air connection and to avoid high ambient air conditions in the rack.

If Q2 or Q4 are replaced, do not solder the transistor leads until the heat sink is completely assembled and the screws tightened. No heat sink compound is required.

POWER INTERFACE BOARD

SCHEMATIC 81-9033-0574-6

This card mounts on a metal bracket in the left rear of the frame (viewed from front). Its purpose is to provide a connector set (input and output loop-thru) for power to the frame. Fuses prevent an overload or short in the frame from blowing the main power supply fuses. Fast blow fuses should always be used for replacements and the fuses do not affect the loop-thru function. Only the video voltage (pins 4, 5, and 6) are used in the DA frame. Power out to the VDA cards is via a 6 pin connector. If this connector is removed, polarity should be observed when it is replaced.

VDA OUTPUT INTERFACE ASSEMBLY - 10 OUTPUT

One assembly is required for each VDA and a 5 1/4" VDA frame holds 10 assemblies. This assembly provides input and output BNC connectors with test points. Two VDA's can be used with this unit. The VDA 10L allows the input to be looped thru the input connectors. It has a high impedance input and if the signal is not looped thru, a 75 Ohm terminator must be used on the loop thru input connector. Either input connector can be in or out.

The VDA 10T allows the coax shield to "float" so that if a potential difference exists between grounds at the ends of the input cable, common mode hum can be reduced to tolerable levels. This card terminates the line so no loop thru is available and no terminator should be used on the extra input connector. The input may be thru either input connector.

Test points are not isolated from the input and output signals. Therefore a high impedance probe should be used to avoid disturbing the line being probed.

The 10 output connectors do not have to be terminated if they are not used. However, a small amount of change in frequency response above about 8 MHZ will occur as the outputs are loaded.