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AA-374

AUDIO DISTRIBUTION AMPLIFIER

802174

15-08-1988
ISSUE 4

DESIGNED AND MANUFACTURED
IN AUSTRALIA

AA-374

AUDIO DISTRIBUTION AMPLIFIER

INSTRUCTION BOOK

W A R N I N G

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.

GENERAL DESCRIPTION

The AA-374 is a one input, ten output AC powered Audio Distribution Amplifier with extended frequency response and low distortion intended for use in broadcast audio circuits.

The AA-374 is housed in an IRT plug-in module which mounts in a IRT F-100D rack mounting frame. Input, output and power connections are made via a RB-70 rear assembly supplied as part of the AA-374. Audio connections are to plug in screw terminal blocks. AC power is connected by a three wire power cord.

Equipment provided:-

AA-374 Audio Distribution Amplifier
Single width slide tray
RB-70 Rear Assembly (10 OUTPUTS)

Accessories Available

F-100D	Module Mounting Frame:- Will mount 10 AA-374 amplifiers or a mix of IRT equipment modules in 134mm of 19" Standard Rack Space (3 Rack Units)
TME-1	Module Extender:- Enables the module to be operated in its operating position and provides access to the circuit board and internal adjustments.
RB-70	Rear Assembly:- An additional rear assembly facilitates bench testing and servicing of the AA-374

Instruction Book

TECHNICAL DATA

POWER REQUIREMENTS

240v AC 50Hz 7VA

INPUT

Balanced bridging - 600 ohm circuit
Impedance - 20K ohms
Common mode (HUM) rejection - 60dB

OUTPUTS

Source impedance - 40 ohms
Load - Balanced circuit.
Number - 10, balanced
(Centre tap grounded)
Max output level - +24dBm
Output Isolation - >60dB at 1KHz
- >60dB at 10KHz

TRANSFER CHARACTERISTICS

GAIN	Adjustable	- +/- 6dB
FREQUENCY RESPONSE	20Hz to 20KHz	- +/- 0.2dB
HARMONIC DISTORTION	Less than 0.01% at an output level of +20dBm in the frequency range of 20Hz to 20KHz	
RESIDUAL NOISE	Less than -100dB at the output Referenced to +20dBm.	

DIMENSIONS

HEIGHT	WIDTH	DEPTH
118mm	41mm	326mm

CIRCUIT DESCRIPTION

The AA-374 input circuit consists of a balanced circuit input amplifier with AC input coupling to eliminate any DC voltages that may be present in the input lines. One leg of the balanced circuit is coupled to U1/1 a unity gain inverting amplifier and mixed with the signal from the other leg of the balanced circuit at the mixing input of U1/2.

The mixing of the signals on the two legs of the balanced input circuit at U1/2 also provides cancellation of any common mode signals present on the input signal, this is adjusted by RV1 a preset potentiometer on the circuit board. The adjustment is made by applying a 50Hz signal at a level of 0dBm between ground and the balanced input leads connected TOGETHER and adjusting RV1 for minimum signal at the output of the amplifier.

The output amplifiers each consist of an operational amplifier driving a current gain complementary transistor pair with overall feedback from the output to the op-amp input circuit. One amplifier is operated in the inverting mode and the other in the non-inverting mode, in this way a balanced audio signal about earth is provided when sourced through the 22 ohm splitting resistors in the rear assembly. A master gain control RV1 accessible from the front panel is placed in the circuit at the output of the input amplifier to set the level to output amplifiers. The output amplifiers use high stability precision components throughout to maintain gain equality between them.

The power supply consists of a bridge rectifier circuit which rectify the output of the secondary windings of transformer T1, the resultant DC voltages being regulated by IC fixed voltage regulator circuits to provide the operating voltages for the AA-374.

Test points are provided on the front panel to monitor the Audio Output level.

INSTALLATION

The AA-374 is supplied with a slide tray, rear assembly and associated hardware, for mounting in a F-100D frame.

Slide Tray

The slide is a shallow tray which supports the module in the frame. It is mounted on the front and rear cross members of the frame and is fixed in place with the steel clips (speed nut type) provided.

Rear Assembly

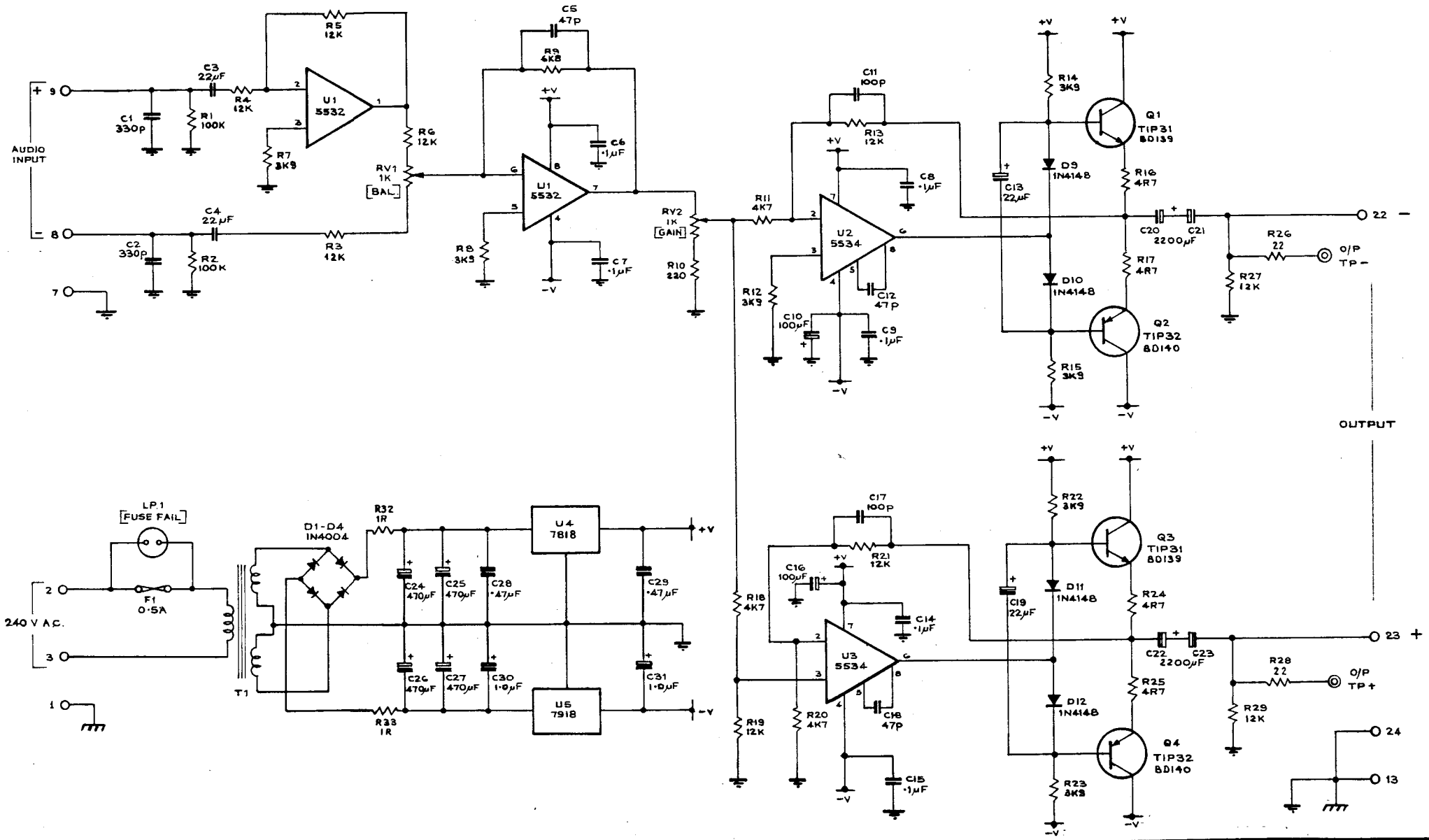
The rear assembly is mounted on the rear of the frame with the 4BA screws provided. Place the rear assembly on the frame and secure it loosely, using the screws provided with the rear assembly and the key provided with the F-100D frame. Slide the equipment module into the frame using care to align the plug of the module and the socket of the rear assembly. The screws can now be tightened to secure the rear assembly in place, do not over tighten these screws, as excessive force will damage the thread in the mounting frame.

External Connections

Input and output signal connections are made to plug in screw terminal blocks.

Shielded twisted pairs of wires should be used for the input and output connections. The shields should be securely grounded at one end only. An insulating covering over the shield of the input lead may be helpful in reducing noise and crosstalk.

Power connection is via a three wire power cord.



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TITLE AA-374 A.D.A.

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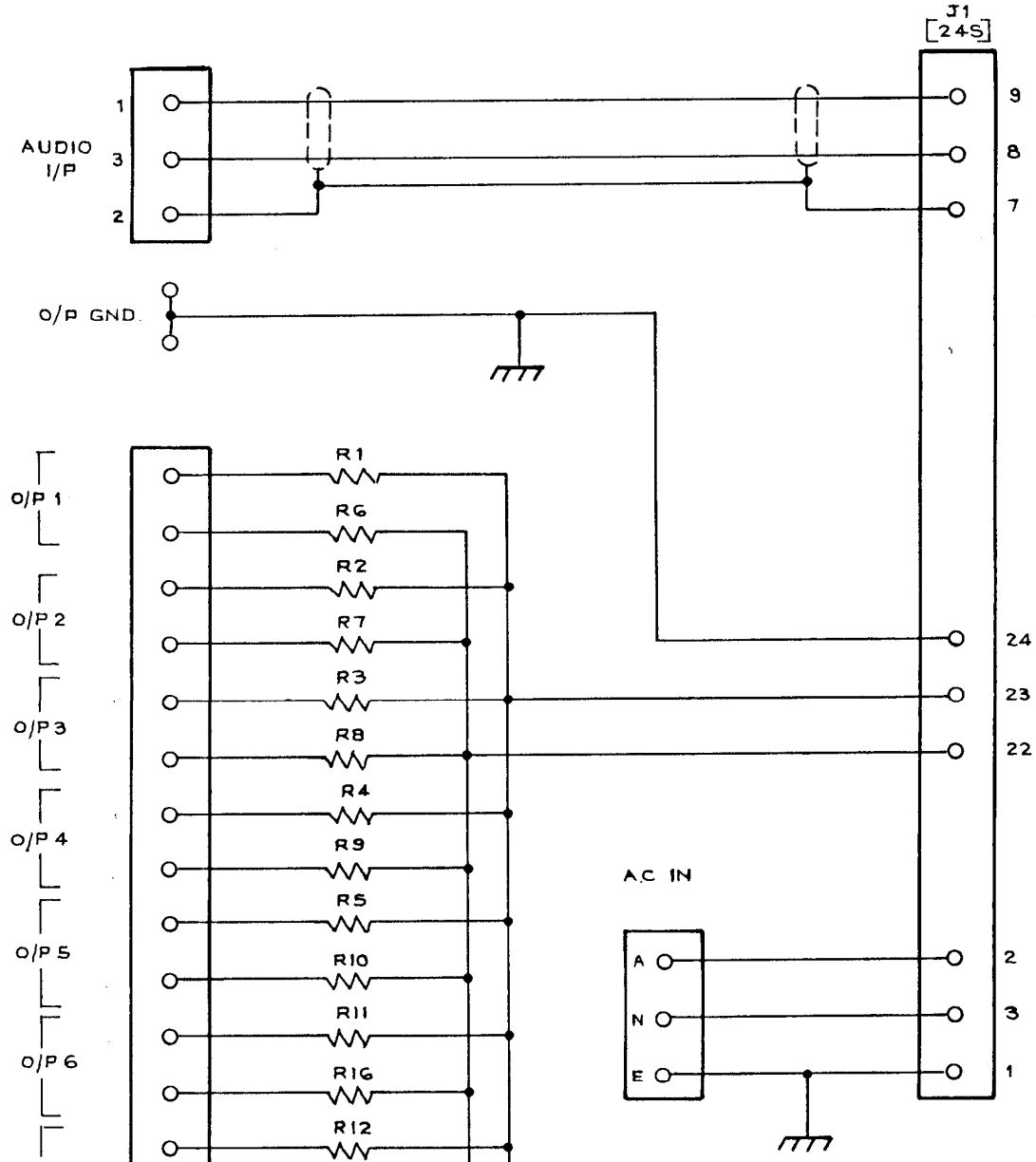
IRT Electronics Pty Ltd
26 Hotham Pde. Artarmon, Australia 2064



NOTE: All resistors are 22 ohm.

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TITLE
RB-70
REAR ASSY

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I.R.T. Electronics Pty. Ltd.
26 Hotham Pde., Artarmon, Australia 2064

I.R.T. ELECTRONICS PTY.LTD.

Replacement Parts List **802174 AUDIO DISTRIBUTION AMPLIFIER AA-374 ISSUE 4**

Part No.	Description.	Qty	Cct Ref.	Sup
PC802175	PCB AA-374/375	1		120
RMF255-1R0	RESISTOR METAL FILM .25W 5%	2	R32,33	58
RMF255-22R	RESISTOR METAL FILM .25W 5%	2	R26,28	58
RMF255-4R7	RESISTOR METAL FILM .25W 5%	4	R16,17,24,25	58
RMF255-220R	RESISTOR METAL FILM .25W 5%	1	R10	58
RMF255-3K9	RESISTOR METAL FILM .25W 5%	7	R7,8,12,14,15,22,23	58
RMF251-4K7	RESISTOR SPACE MISER .25W 1%	3	R11,18,20	49
RMF255-6K8	RESISTOR METAL FILM .25W 5%	1	R9	58
RMF255-12K	RESISTOR METAL FILM .25W 5%	6	R3-6,27,29	58
RSM251-12K	RESISTOR SPACE MISER .25W 1%	3	R13,19,21	49
RMF255-100K	RESISTOR METAL FILM .25W 5%	2	R1,2	58
63P102	RESISTOR VARIABLE 1K	1	RV1	69
WA2L040S102A	RESISTOR VARIABLE 1K	1	RV2	2
1N4004	DIODE POWER 1A	4	D1-4	97
1N4148	DIODE GP 75V .1A	4	D9-12	97
CC47P	CAPACITOR CERAMIC 47pF	3	C5,12,18	43
CC100P	CAPACITOR CERAMIC 100pF	2	C11,17	43
CC330P	CAPACITOR CERAMIC 330pF	2	C1,2	43
CC100N	CAPACITOR CERAMIC 100nF	6	C6-9,14,15	43
CC470N	CAPACITOR CERAMIC 470nF	2	C28,29	43
TT1.0/35	CAPACITOR TAG TANT 1.0uF 35V	2	C30,31	67
RB22/35	CAPACITOR ELECTRO 22uF 35V	2	C3,4	81
RT22/25	CAPACITOR ELECTRO 22uF 25V	2	C13,19	81
RB100/25	CAPACITOR ELECTRO 100uF 25V	2	C10,16	81
RB470/35	CAPACITOR ELECTRO 470uF 35V	4	C24-27	81
RB2200/16	CAPACITOR ELECTRO 2200uF 16V	4	C20-23	81
BD139	TRANS NPN TO-220	2	Q2,4	81
BD140	TRANS PNP TO-220	2	Q1,3	81

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Replacement Parts List **802174 AUDIO DISTRIBUTION AMPLIFIER AA-374 ISSUE 4**

Part No.	Description.	Qty	Cct Ref.	Sup
NE5532P	DUAL OP-AMP	1	U1	97
NE5534	OP-AMP	2	U2,3	97
7818	IC REGULATOR 18V 1A	1	U4	97
7918	IC REGULATOR -18V 1A	1	U5	97
RF2775	POWER TRANS 240V/2x22v (or PT40/5VA)	1	T1	39
H2072Z01	PCB PINS	2		54
26-4100-24P	CONNECTOR 24 PIN P	1	P1	54
SL77	NEON INDICATOR RED	1	LP1	20
FH332	FUSE HOLDER 20x5mm	1	F1	20
20X5 .5	FUSE 500mA	1	F1	94
105-1041-001	TEST JACK	2	TP1,2	54
E802176	ESCUTCHEON AA-374	1		62
SBV1700/14/0016	BRASS STUD 4BA	1		70
SNU/0502/17/4	"U" NUT 6BA	1		70
800028	COVER S/W MODULE	1		26
800029	FRAME S/W MODULE	1		26
801567	HANDLE S/W MODULE	1		1

NOTE: If the PT40/5VA Transformer is used then 15v regulator IC's must be used.

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Replacement Parts List **802177 REAR ASSEMBLY RB-70 ISSUE 3**

Part No.	Description.	Qty	Cct Ref.	Sup
PC802118	PCB RB-67/70 ISSUE 3	1		120
PC802086	PCB RESISTOR NETWORK (SIZE 20 BOARD)	.05		68
RMF255-22R	RESISTOR METAL FILM .25W 5%	20		92
Z5.598.4353.0	SOCKET 3 PIN	3		61
Z5.598.5253.0	SOCKET 12 PIN	2		61
800319	PLATE REAR ASSEMBLY	1		1
800320	REAR ASSEMBLY SIDE PLATE	1		26
26-4200-24S	CONNECTOR 24 PIN S	1		54
H2097	CABLE CLAMP	1		96
CAP SCREW 4BA	SCREW ALLEN HEAD 4BA BLK	2		4
25.610.0353.0	PLUG 3 PIN	11		61