1. Summary

Trimax A71 Line amp. S.N. 400
Trimax A71AX Line amp. S.N. 3322

Transformer isolated input and output with gain control. 24Vdc regulated feed.

A71:

Input Transformer	TA2365. 1:1.6 TR. 1-2 DCR 390Ω. 3-4 DCR 1k6Ω.
Output Transformer	TA2314. 7-9 to 4-5 to 1-2 TR 1:0.58:0.4. 1-2 DCR 99Ω. 7-8-9 DCR 34+34Ω. 4-5 DCR 12Ω.
POT	MORGANITE S 047 LHNAR.
Caps	Ducon datecodes 436, 446, 504, 067
Transistors	2N4248 x4 TO-106 pnp datecodes 704, 70
	2N3565 x1 TO-106 npn datecode 703
	AX6126 x2 TO-5 npn datecode 703 on H/S

A71AX differences:

Output Transformer	TA2314A. 7-9 to 4-5 to 1-2 TR ?. 1-2 DCR ?Ω. 7-8-9 DCR ?+?Ω. 4-5 DCR ?Ω.
POT	MORGANITE S6-71 LHNAR.
Caps	Ducon datecodes 504, 3171
	AEE datecodes 128
Transistors	2N4248 x4 TO-106 pnp datecodes 128
	2N3565 x1 TO-106 npn datecode 127
	AX6126 x2 TO-5 npn datecode 129 on H/S

No 33pF across gain pot wiper. Twisted pairs to pot.

Both in very good general condition. Some resistors drifted in A71.

It appears that this serial 238/30 procurement was for the Bureau of Meteorology (BoM), as L.M.Ericsson (the owner of Trimax) won a tender in Feb 1969 for 'supply of programme line amplifiers', and some parts have datecodes from 1969-70, but there is some doubt as to datecodes and whether these amps were for that BoM tender award, as it appears that A71 amps were used in commercial radio facilities.

2. Measurements

e-cap: leakage 24Vdc <13uA >10min ; ESR = 6.1-6.7 mohm 10kHz; Cap = 98uF.
1uF cap: leakage 24Vdc = 0nA ; ESR = 20 ohm (nominal) 10kHz; Cap = 1.02uF.

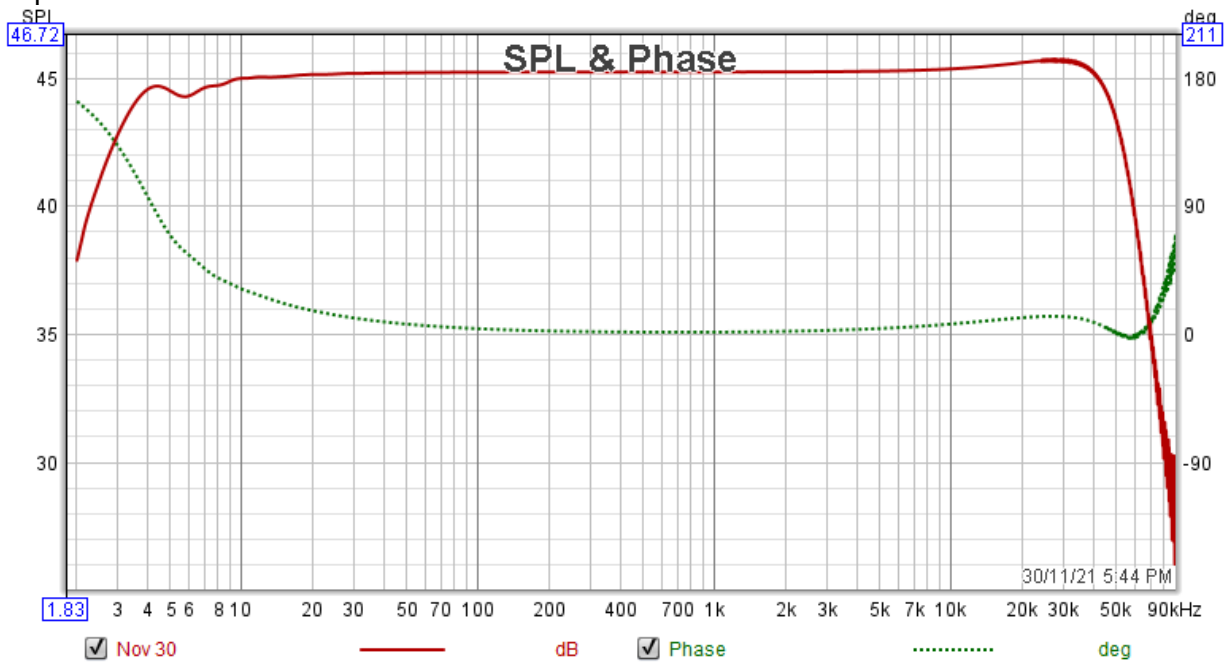
The output level noticeably starts clipping at about 13Vrms in to a 560R load, and distortion shoots up above 12Vrms (250mW output). Distortion rises linearly from 0.012% at 1Vrms to 0.075% at 10Vrms, and the 2HD dominates. The voltage sensitivity with gain pot at max is 55x, so 220mVrms input for 12V out.

The output stage npn's idle at about 75mA and 16-17V (ie. 1.2W) on a common heatsink which settles to about +25C above ambient. 1971 magazine data for Australian Fairchild TO-5 bi-mesa power bjts indicate package thermal resistance could be down at 17.5C/W, so die temp is likely circa 70C on my bench. The output stage devices appear to idle with a little difference in current but that is due to drifted resistor values used to indicate current. Apart from the output stage feed at -

23.3V (as 24V supply is fed through 6R8), the other circuitry has a -17.4V rail (about 3mA consumption).

Wrt the input transformer impedances, the 100k pot load and loading from input stage bias resistors could indicate spec input impedance higher than 600 ohm, although the rear panel connector includes a 600Ω resistor can be inserted in series with input.

A frequency spectrum plot at 5.3Vrms output (50mW) shows the design is quite wideband and within 1dB from a few Hz to 45kHz. The testing loop uses a 100x scope probe and loopback response is calibrated flat across that bandwidth.

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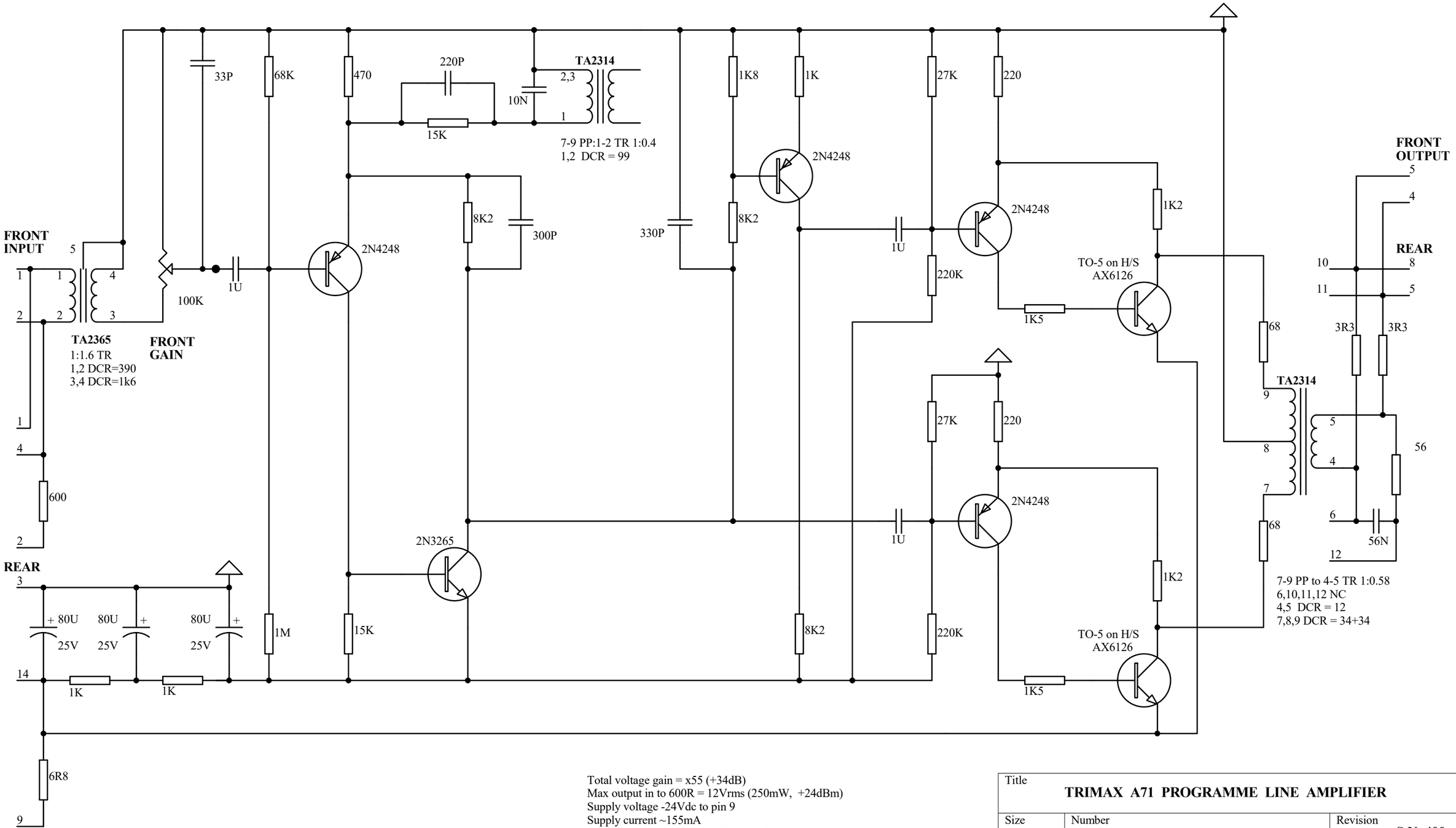

Total voltage gain = x55 (+34dB)
Max output in to 600R = 12Vrms (250mW, +24dBm)
Supply voltage -24Vdc to pin 9
Supply current ~155mA
Output stage npn idle bias ~75mA (1.2W)

Title	**TRIMAX A71 PROGRAMME LINE AMPLIFIER**	
Size A4	Number	Revision **S.N. 400**
Date: 1-Dec-2021		Sheet of
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