Contents:

1 Safety and warranty

1.1 Safety

-Warning
Inside the PMS 5000 amplifier module, AC voltages up to 240 V may be present !

-Connection to the mains voltage
The PMS 5000 amplifier module chassis is connected to ground by the grounding conductor in the power cord. To avoid electrical shock, plug the power cord into a properly wired receptacle. When this ground connection is not present or interrupted, all accessible parts of the amplifier can cause an electrical shock.

-Fuses
To avoid fire hazard, only replace fuses by the same type and value.

-Maintainance
Do not perform internal maintainance or adjustments unless there is someone present, capable of rendering first aid and reanimation.
Try to perform all service works with mains power off. Remove mains connector to be sure that no internal voltages are present.

1.2 Warranty

SUMMARY

Stage Accompany warrants to the original commercial purchaser of each new Stage Accompany product, from the date of purchase by the original purchaser until the end of the warranty period, that the product is free of defects in materials or workmanship.

WARRANTY PERIOD

The warranty period on all Stage Accompany products is five years from the date of the first consumer purchase, with the exception of:
- all electrical products: three years from the date of the first consumer purchase;
- cone assemblies in the loudspeaker and diaphragms in the Compact Drivers: one year from the date of the first consumer purchase;

- movable parts, such as castors, locks, handles, hinges, fans, etc: one year from the date of the first consumer purchase;
- computers and associated peripherals: six months from the date of the first consumer purchase.

HOW TO VALIDATE THE WARRANTY

To validate warranty, fill out the enclosed warranty card and return it to Stage Accompany within ten days of the purchase date. The purchaser must always keep the original bill of sale to establish the date of purchase.

ITEMS EXCLUDED FROM WARRANTY

Appeal on warranty will be voided in case :

- of defects caused by influence from the outside, accident, misuse, neglect or influence of water;
- the serial number on the warranty and/or product has been defaced, altered or removed;
- of damage due to shipment;
- of damage resulting from neglection of instructions listed in the user manual;
- of damage caused by incorrect, abnormal or abuse during delivery;
- the unit has been repaired (or shows signs of repair) by someone not authorised by Stage Accompany;
- if the warranty registration card has not been returned to Stage Accompany within 10 days of purchase;
- the original bill of sale can not be presented whenever warranty service is required;

WHAT WE WILL DO

Shipment of the product to a Stage Accompany dealer is at the risk and responsibility of the customer.
Stage Accompany will pay all labour and material expenses for all repairs covered by this warranty. Stage Accompany will not pay the cost of shipment to the Stage Accompany dealer or to the factory. However Stage Accompany will pay the return shipping charges if repairs are covered by the warranty.

CAUTION

Warranty work can only be performed at our authorised service centers or at our factory. Every repair or attempted repair by a non authorised party will void the warranty.

Stage Accompany reserves the right to alter specifications without prior notice.

2 Description of the Blue Box

The Blue Box is a microprocessor controlled, active loudspeaker system, consisting of:

SA 4525 enclosure,
SA 8525 high frequency driver,
SA 2527 horn,
SA 1503 low frequency driver and
PMS 5000 amplifier module.

The system comprises the following features:

- **microprocessor control**
  All the electronic functions are monitored and controlled by the microprocessor. External control is possible through SAnet.

- **full range**
  The blue box contains 2 loudspeakers, covering the entire audio bandwidth. Extra tweeters or subwoofers are not needed.

- **high output**
  The Blue Box is capable of delivering a sound pressure level of 120 dB continuous and 130 dB peak at 1 meter. Seperate power amplifiers are applied for each loudspeaker.

- **automatic leveller function**
  A built in microprocessor controlled leveller keeps the average output within the safe operating area of the loudspeakers. No VCA's are involved!

- **balanced input**
  The input is electronically balanced (switchable to unbalanced) for excellent hum and noise rejection and optimal performance. Phase is switchable to inverted.

3 Taking the Blue Box apart

The Blue Box can be taken apart in two ways.

- Access to the electronics can be obtained by removing the amplifier module
- The loudspeakers can be taken out

In both cases, be sure that the mains plug is removed from the receptacle.

The best way to dismount the amplifier module is shown in figure 1.
Place the Blue Box on its wheels and open the flightcase. Remove the lid and place the blue box on its speaker panel. Be sure the surface is flat!
Remove the bolts that attache the actual Blue Box to its flightcase; one in every horizontally mounted handle.
Next remove the flightcase from the box just by pulling it off the Blue Box enclosure.

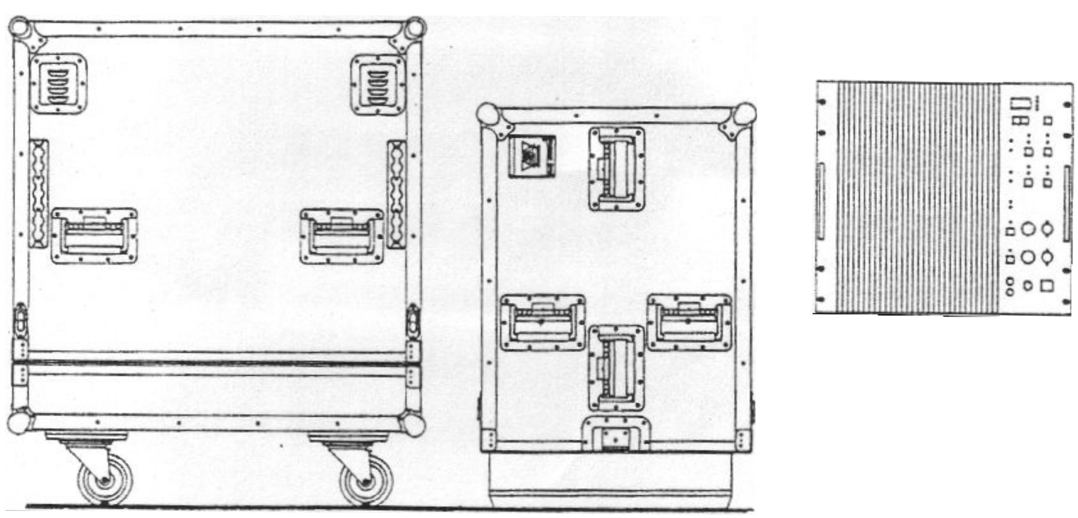


Fig 1 Removing the amplifier module

The module is attached to the chassis with 8 bolts, 4 on each side. Remove these bolts and use the handles of the module to lift the module approx. 20 cm out of the enclosure. Disconnect the loudspeaker connectors and the flat cable.
Now the module is free of connections and can be fully pulled out of the enclosure.

To remove the loudspeakers (fig 2), place the Blue Box on its back. Remove the lid of the flightcase,
remove the foam front (by pulling it of gently) and
remove the mounting bolts of the speaker or driver you want to replace.
Now the loudspeaker can be pulled out. In case the speaker is jammed, use a lever (a screwdriver for example).
Disconnect the wires from the loudspeakers terminals.

Do not use the Blue Box for sound reinforcement purposes if one of the loudspeakers is removed!

Before re-assembling, connect the red and yellow wires to the red terminal and the black and white wires to the black terminal.

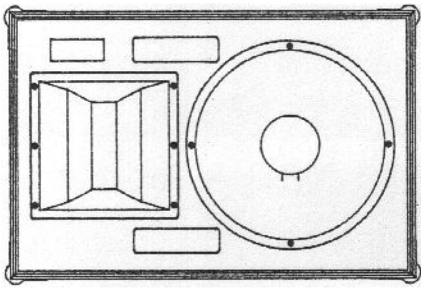
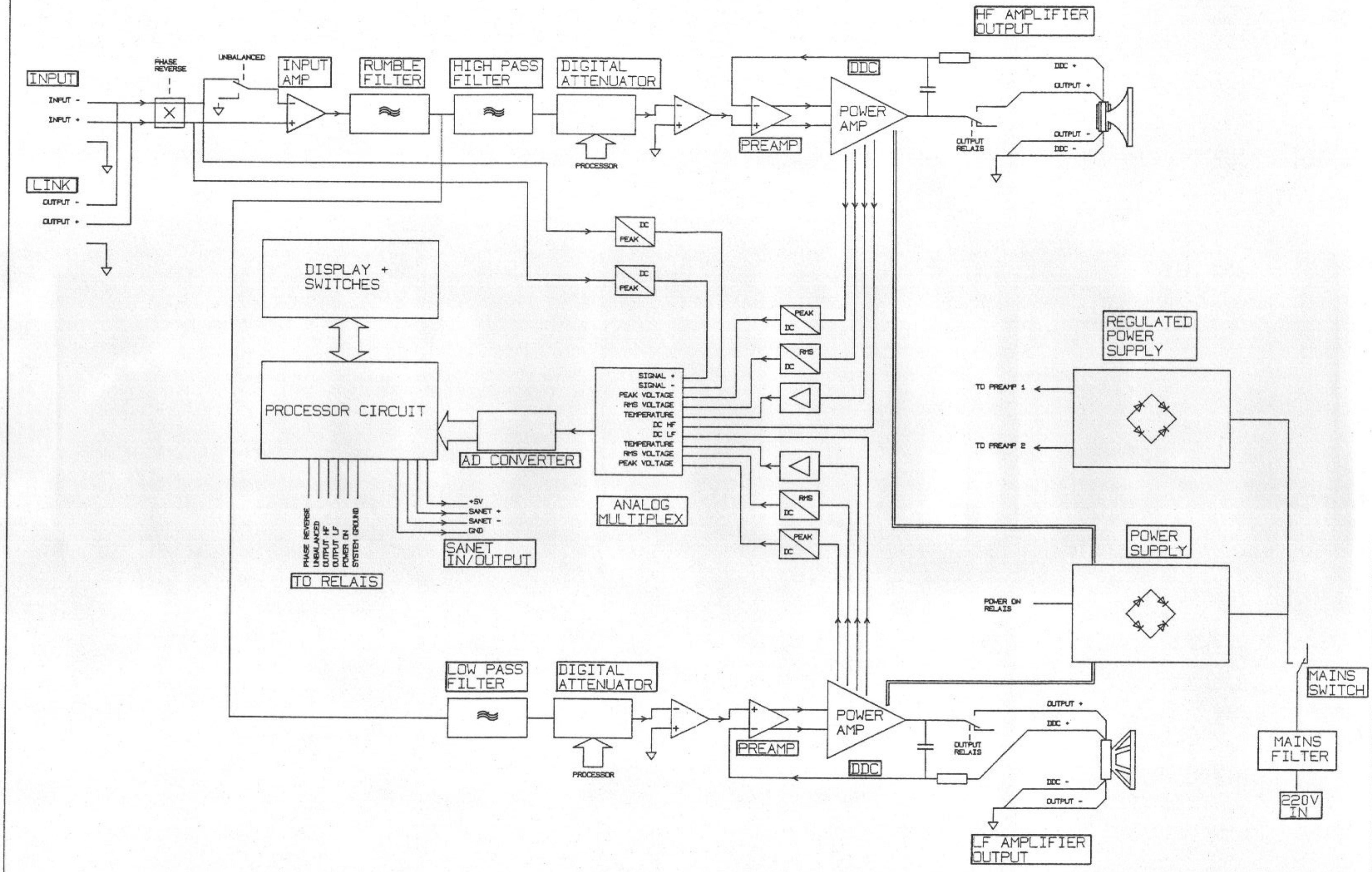


Fig. 2 Frontal view



4.1 BASIC DIAGRAM

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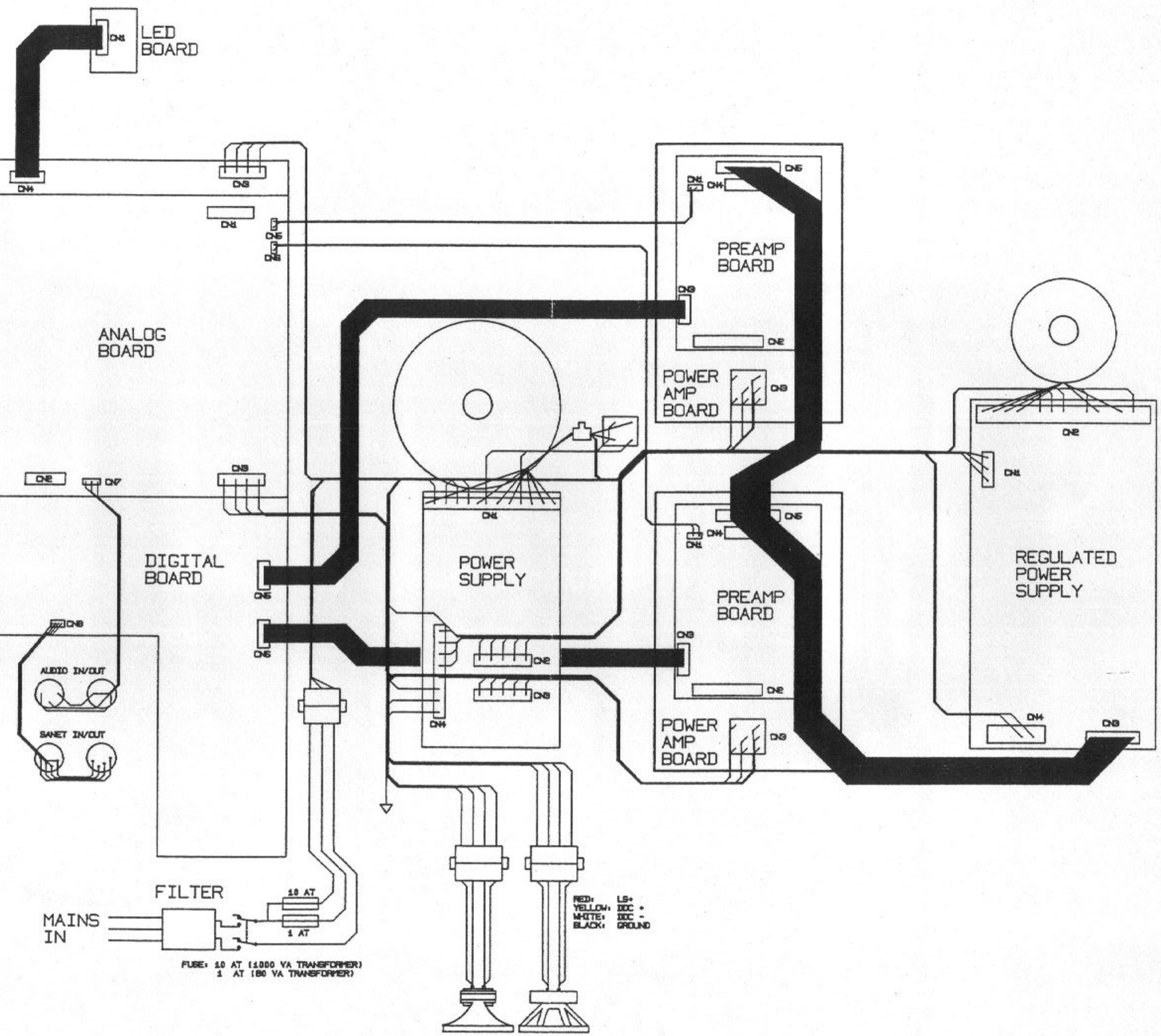
REVISIONS		DRAWN R.K.
A1	DATE 24-08-88	SHEET OF



PAGE 9 4.2 BASIC CONNECTIONS

STAGE ACCOMPANY		
TITLE PPA 1200 SIGNAL CONNECTIONS		
REVISIONS		DRAWN: R.K.
A1	DATE 08-08-88	SHEET OF

5 Basic operation of the electronics

This chapter describes some of the key circuits of the PMS 5000. The complete circuit drawings can be found on page 16 to 29.

5.1 The analog board

The analog board contains the electronics for the input amplifier, a rumble filter, the crossover, the amplifier attenuators and the RMS/peak to DC converters.

The input amplifier is a straightforward opamp differential amplifier.
The amplifier provides for a 3 dB gain. Common mode rejection can be trimmed with TR1. See page 36 for the exact adjustment procedure.
The input impedance is 30 kΩ over both input legs.

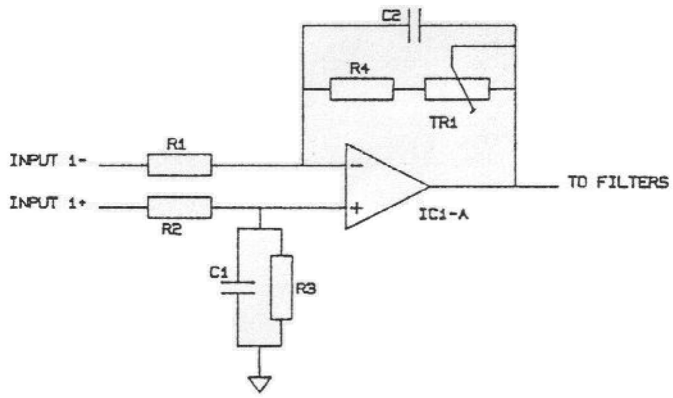


Fig 3 Input amplifier

The input is equiped with two relays. Rel1 reverses the input polarity while Rel2 switches to the unbalanced input configuration.

After debalancing the input, low frequency rumble is removed with a 24 dB/oct bessel filter at 23 Hz (IC2).
IC3 and IC4 split the input signal into high and low frequencies.
The circuit around IC3 is a 24 dB/oct high pass Bessel filter and the circuit around IC4 a 24 dB/oct low pass Bessel filter.
The amplitude of each of the two signals are controlled by IC7 and IC8. These are digitally controlled attenuators (fig 4).

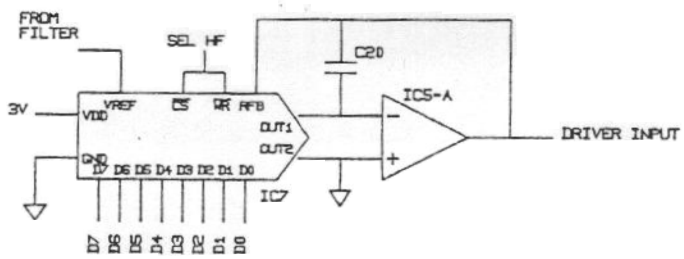


Fig 4 Digital attenuator

The digital code presented to D7..D0 determines the level of attenuation and given by the formula:

$$A = 20 * \log \frac{n}{256}$$

where n is the decimal value of the digital code.

The analog board also contains 6 electronic rectifiers. Four of these are peak to DC converters, the other two RMS to DC converters. The purpose of these rectifiers is to pass the amplitude information on the input and output voltages to the microprocessor.
The basic configurations of the two converters are shown in fig. 5.
In each converter the input signal is double-sided rectified.
The peak rectifier (upper circuit) stores the information through a diode in a capacitor (instant attack, slow decay).
The RMS rectifier (lower circuit) slowly charges and discharges a capacitor in the negative feedback loop of an opamp.

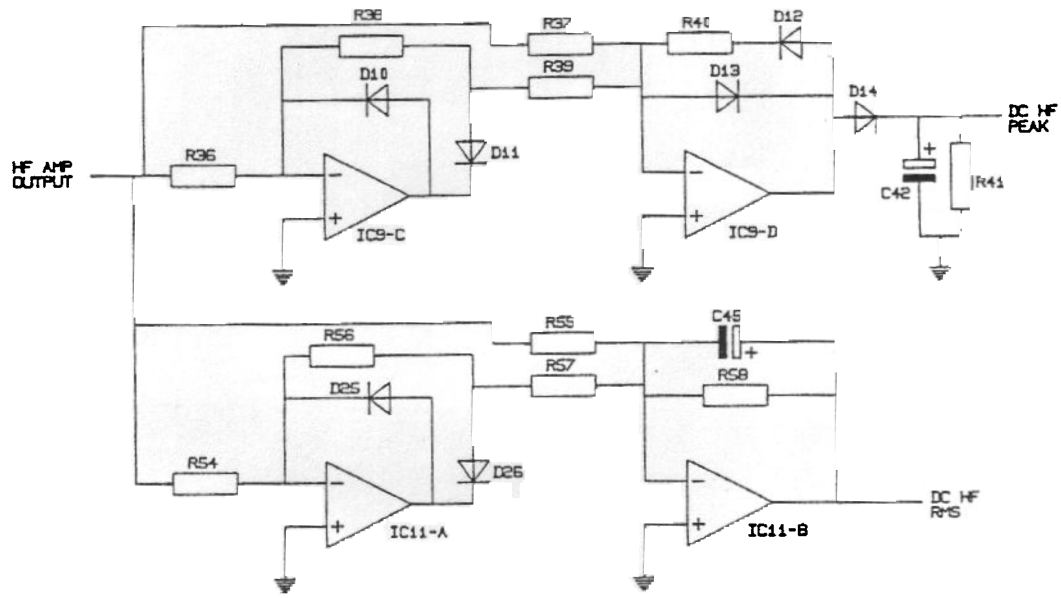


Fig 5 electronic rectifiers

5.2 The digital board

The digital board contains a microprocessor circuit, a multiplexer, an AD converter, the SAnet driver and interface electronics for displays and buttons.

The processor circuit (see page 20) contains an Intel 8344 uP, an address bus decoder (IC20), a 256K EPROM (IC21) and a 8K RAM (IC22). IC25 is a 'watchdog' that disables the write procedure for the RAM in case the power supply is running down.

The remaining part of the digital circuit is found at page 21.

The AD converter is built around IC15, IC16, IC17 and IC18.
IC17-C and IC17-D are buffers for the temperature sensors.
IC15 is an analog multiplexer which selects the source that has to be converted. Possible sources are:

- hot input voltage (dc in 1)
- cold input voltage (dc in 2)
- high frequency peak output level (dc hf peak)
- low frequency peak output level (dc lf peak)
- high frequency rms output level (dc hf rms)
- low frequency rms output level (dc lf rms)
- high frequency amplifier temperature (hf temp)
- low frequency amplifier temperature (lf temp)
- high frequency amplifier dc (dc high)
- low frequency amplifier dc (dc low)

The derived values are used to calculate output power, temperature, signal present etc..
The actual conversion takes place in IC16. In conjunction with IC17-B it produces a DC voltage which is compared to the DC value of the source (selected by IC15). Comparator IC18 'tells' the processor which voltage is higher.
In 8 steps the microprocessor tries to make the output voltage of IC17-B as close as possible to that of IC17-A (successive approximation) and at that time the bit value of IC16 represents the digital value of the source voltage.

IC12 is the SAnet interface. This is a single chip RS422 driver.

IC1...IC3 are the display drivers, IC4...IC7 drive LED's and relays. IC9 transfers the button information to the data bus.

5.3 The preamp board

The preamp board contains the electronics to drive and correct the power amplifier. The basic electronics of the poweramp driver are shown in figure 6.

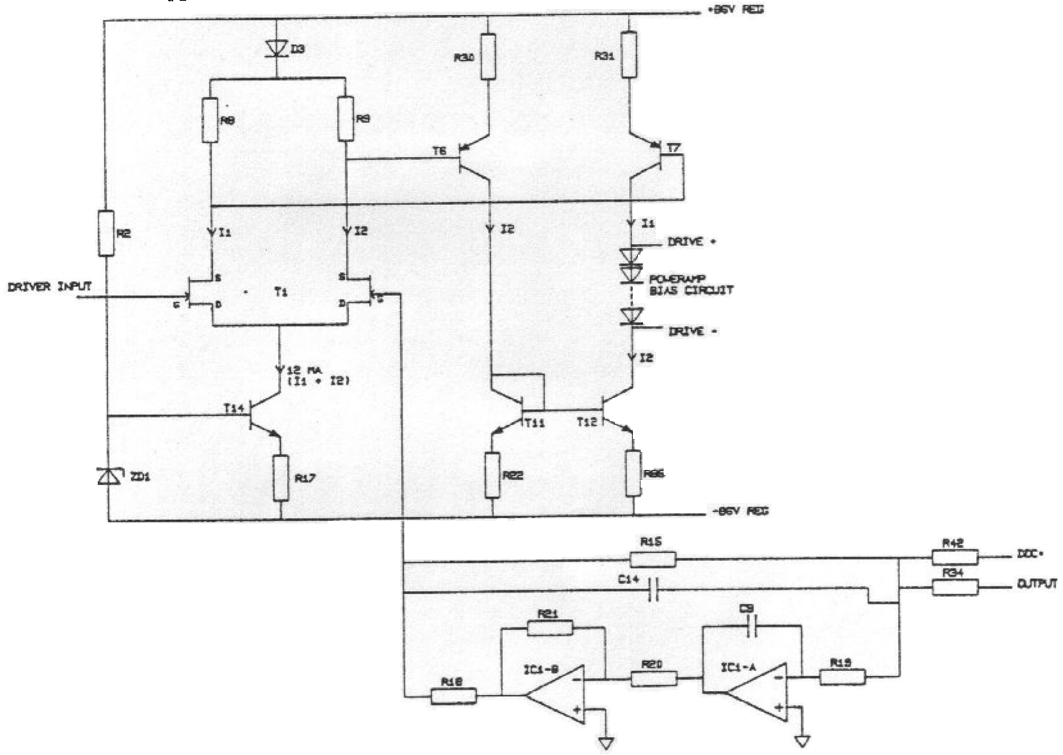


Fig 6 driver circuit

T14 forms a current source together with R17 and ZD1. The collector current is ± 12 mA. This source provides drain current for the dual fet T1.
The input of the amplifier is connected to the gate of the left fet, the feedback network to the gate of the right one. In a steady situation both input and feedback voltages are 0V so both the gate-drain voltages are equal. The current of T14 will be equally divided over the two fets, so I1 = I2 = 6 mA.
I1 passes a current mirror composed with R8, D3 and T7.
I2 passes two current mirrors, one composed with D3, R9, and T6 and the other with T11 and T12.
In a steady situation I1 = I2 so all current pushed out of T7 is pulled into T12 and both the drive currents will be zero.
With a rising input voltage, I1 becomes larger than I2, and not all the current produced by T7 can be pulled into T12. The residual current will be pushed into the power amplifier as drive current.
With a negative input voltage, I2 is larger than I1 and drive current will be pulled out of the power amplifier.

DC stability is achieved by the circuit around IC1. To detect DC offset, the power amplifier's output signal is integrated and fed into the feedback loop.

5.4 The poweramp board

Fig. 7 shows the basic setup of the power amplifier.

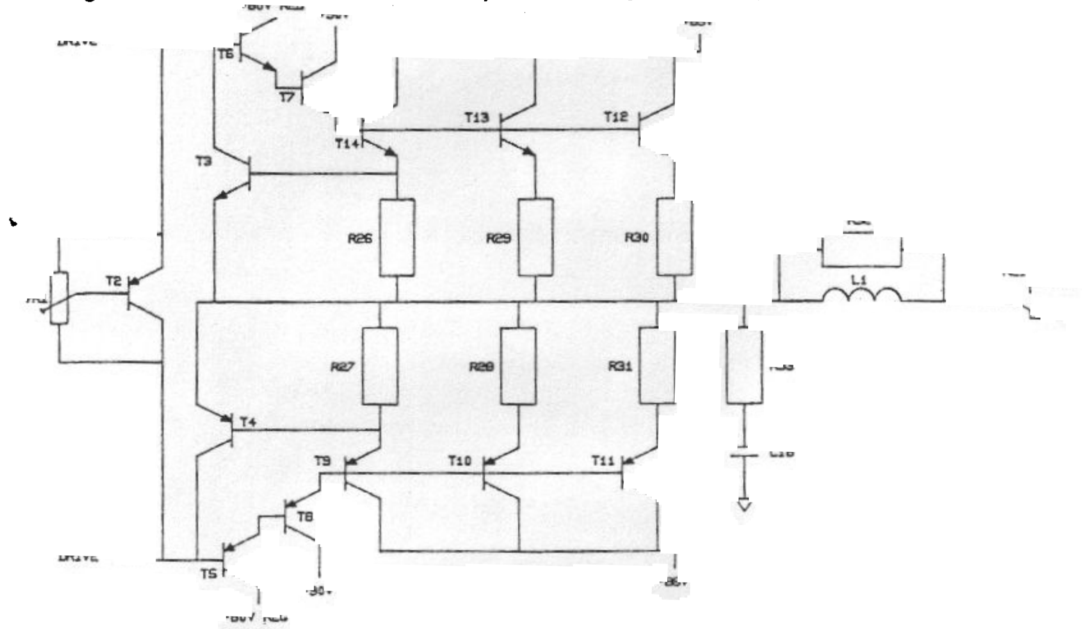


Fig 7 power amplifier

The driver circuit provides two signals, drive + and drive -. The positive drive current is boosted by T6 and T7 and fed to the NPN power transistors T12..T14. The negative drive current is boosted by T5 and T8 and fed to T9..T11.
T2 is set as a constant voltage source and provides the bias current for the amplifier.
Current limiting is handled by T3 and T4. When the current drawn from the amplifier rises, the voltage across R26 and R27 rises too. As soon as this voltage reaches a value of ± 0.65 V, T3 and T4 start to conduct and limit the drive current for the power stage. Current limiting is depending on the output voltage. At 0 V output the maximum current is ± 3 A rising to ± 12 A at 50 V.

5.5 The regulated power supply board

The regulated power supply provides 6 different low power voltages for both the preamplifiers, all relays and the digital circuit.
First there are two 80 V voltages to feed the power amplifiers driver circuits.

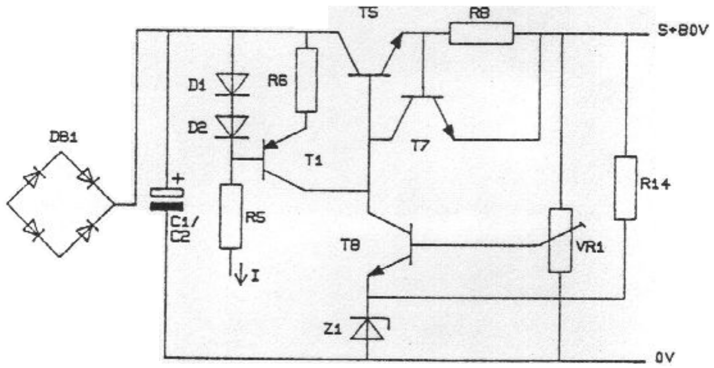
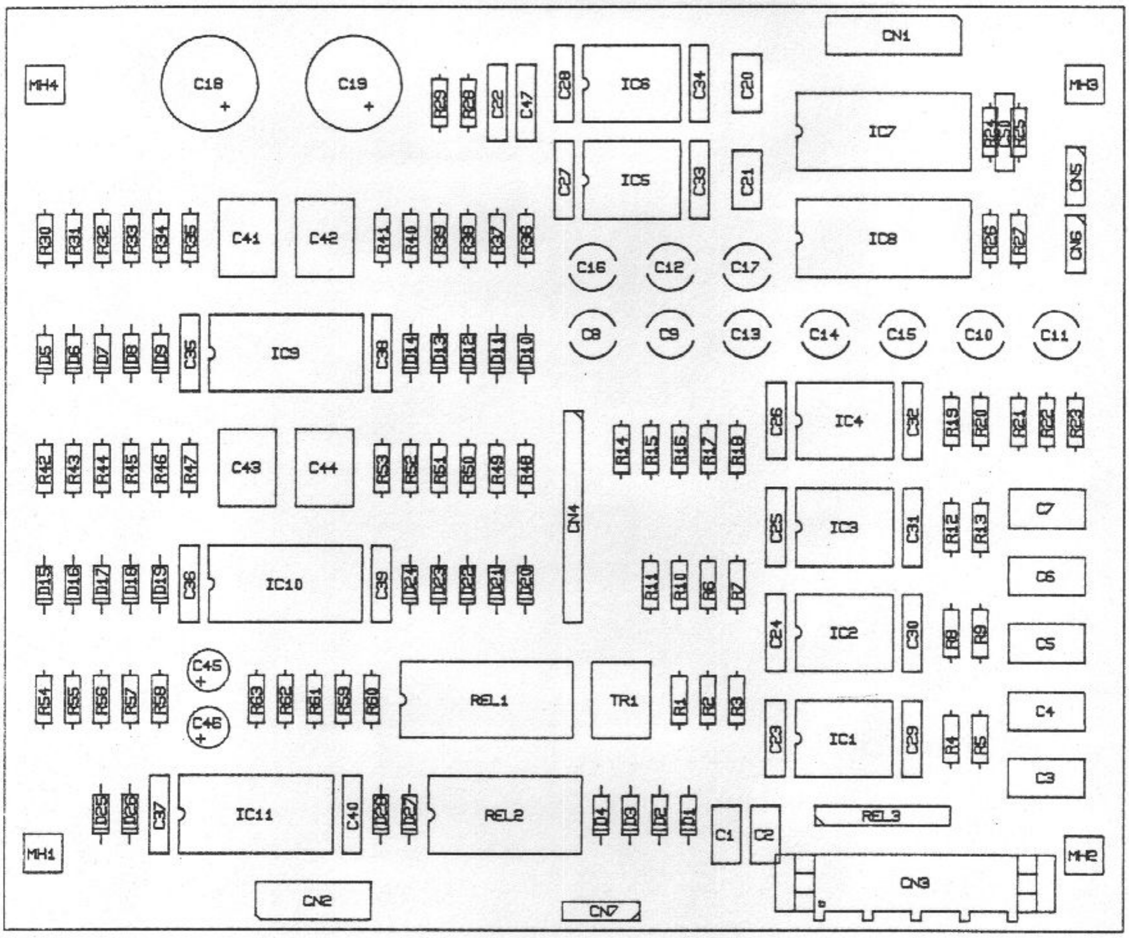


Fig 8 high voltage regulator

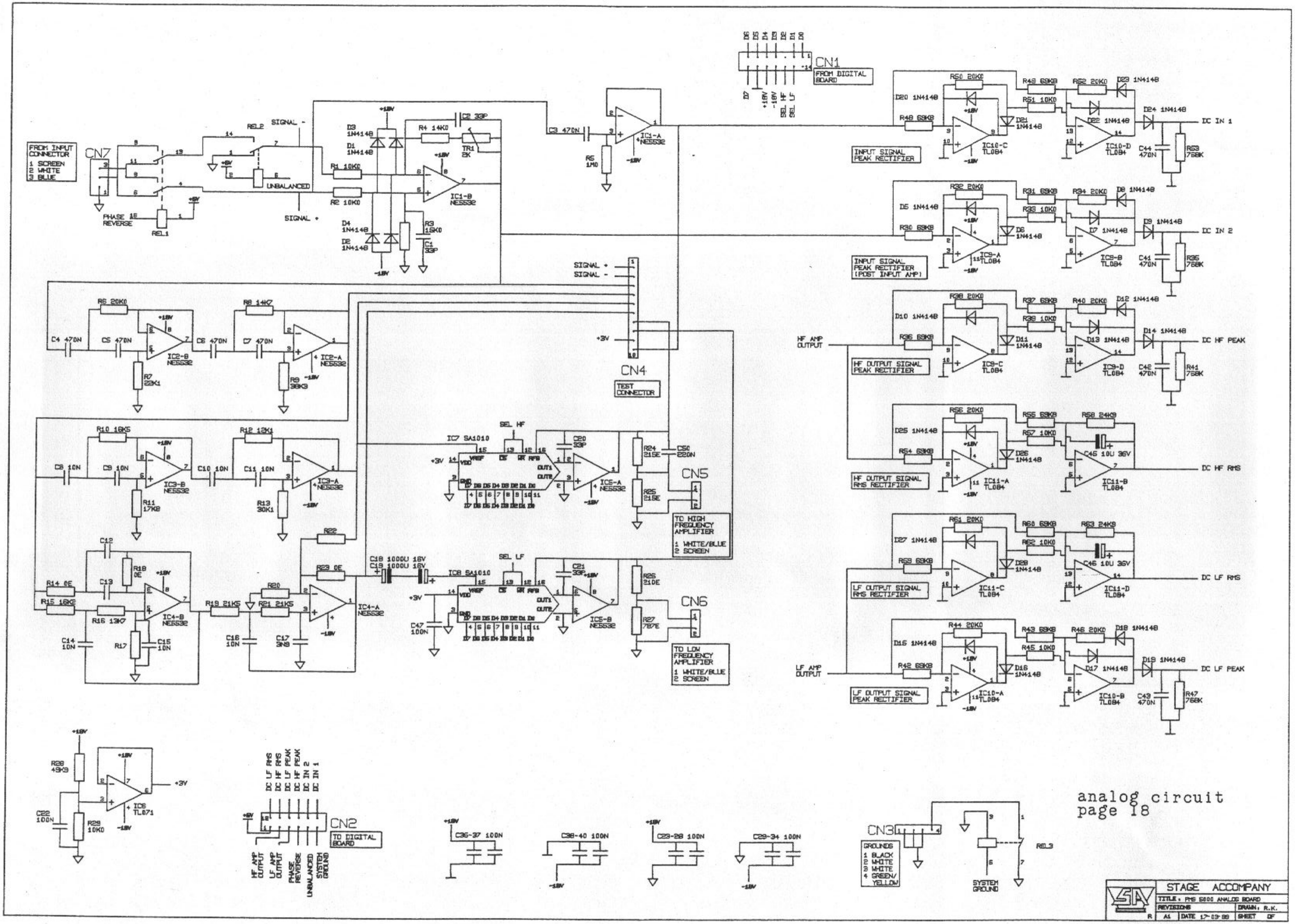
In this circuit (fig 8) T5 is the regulating transistor. Its base is fed by a current source built around T1, R6, D1 and D2. The base current is regulated by T8 which senses the output voltage through VR1. With VR1 the output voltage can be set. Current protection is arranged with T7. With increasing output current, the voltage drop across R8 increases and T7 starts deflecting T5's base current.
The negative 86 V supply is built in exactly the same way.
The 18 V supplies are straightforward, consisting of two integrated circuits.
The 5 V digital supply is extended with transistor T14, allowing larger currents. The unregulated voltage (10 V) is used as relay supply.

5.6 The high power supply board

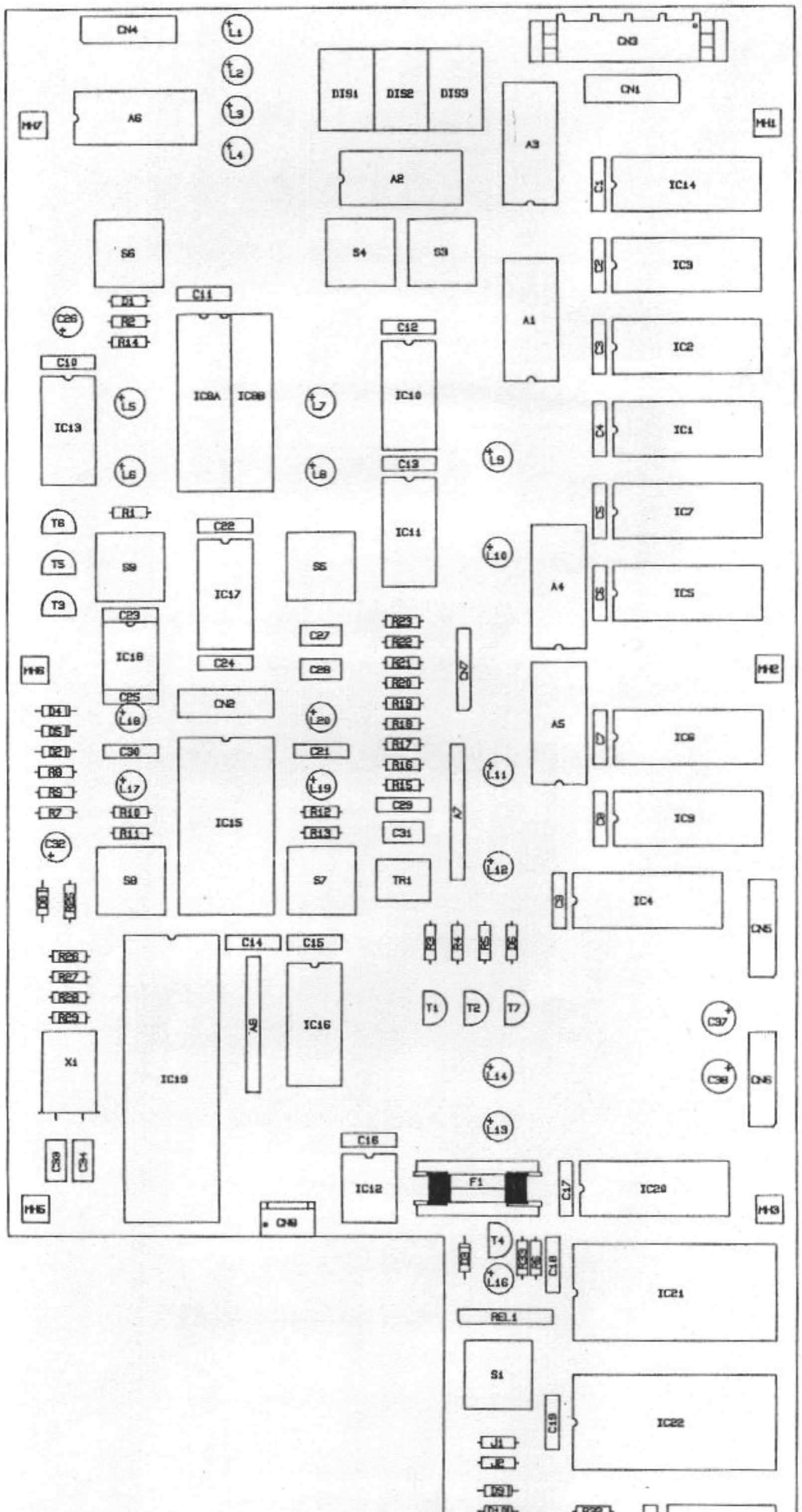
Both power amplifiers share a common power supply which delivers 4 different voltages: two high power 85 V voltages for the amplifiers power stage and two low power 90 V voltages for the driver transistors.
The high power voltages are rectified by a high power rectifier bridge which, for dissipation reasons, is mounted on the chassis. The energy is stored in two 22 mF / 100 V capacitors.
The low power voltages are on board rectified and the filter capacitors are placed on top of the high power voltages.
All capacitors are discharged by resistors when the power has been switched off.
The power supply board also contains a relay that connects the mains voltage to the primary windings of the transformer.



PAGE 17 analog board

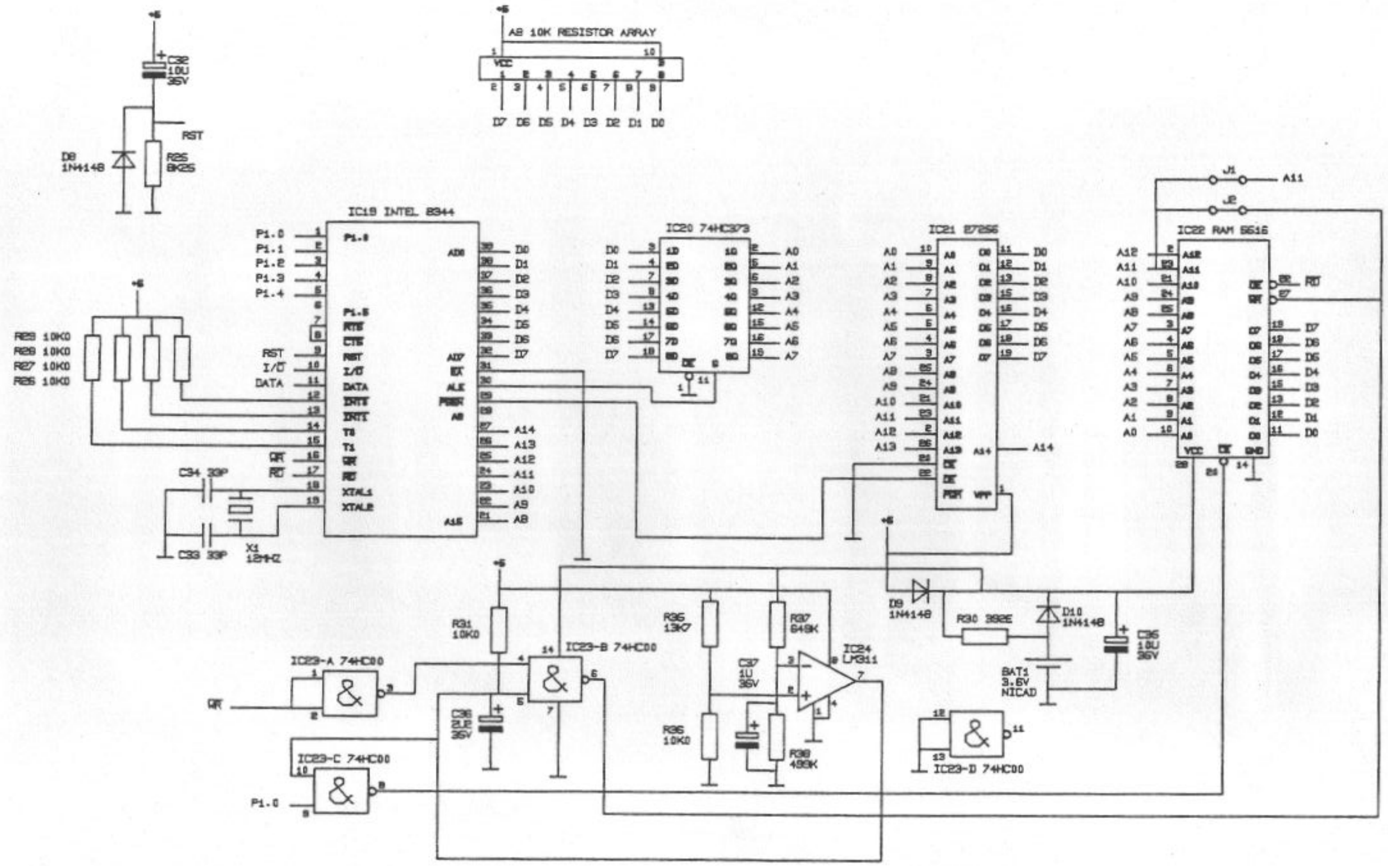


analog circuit
page 18



digital board

PAGE 19



digital circuit /1
page 20

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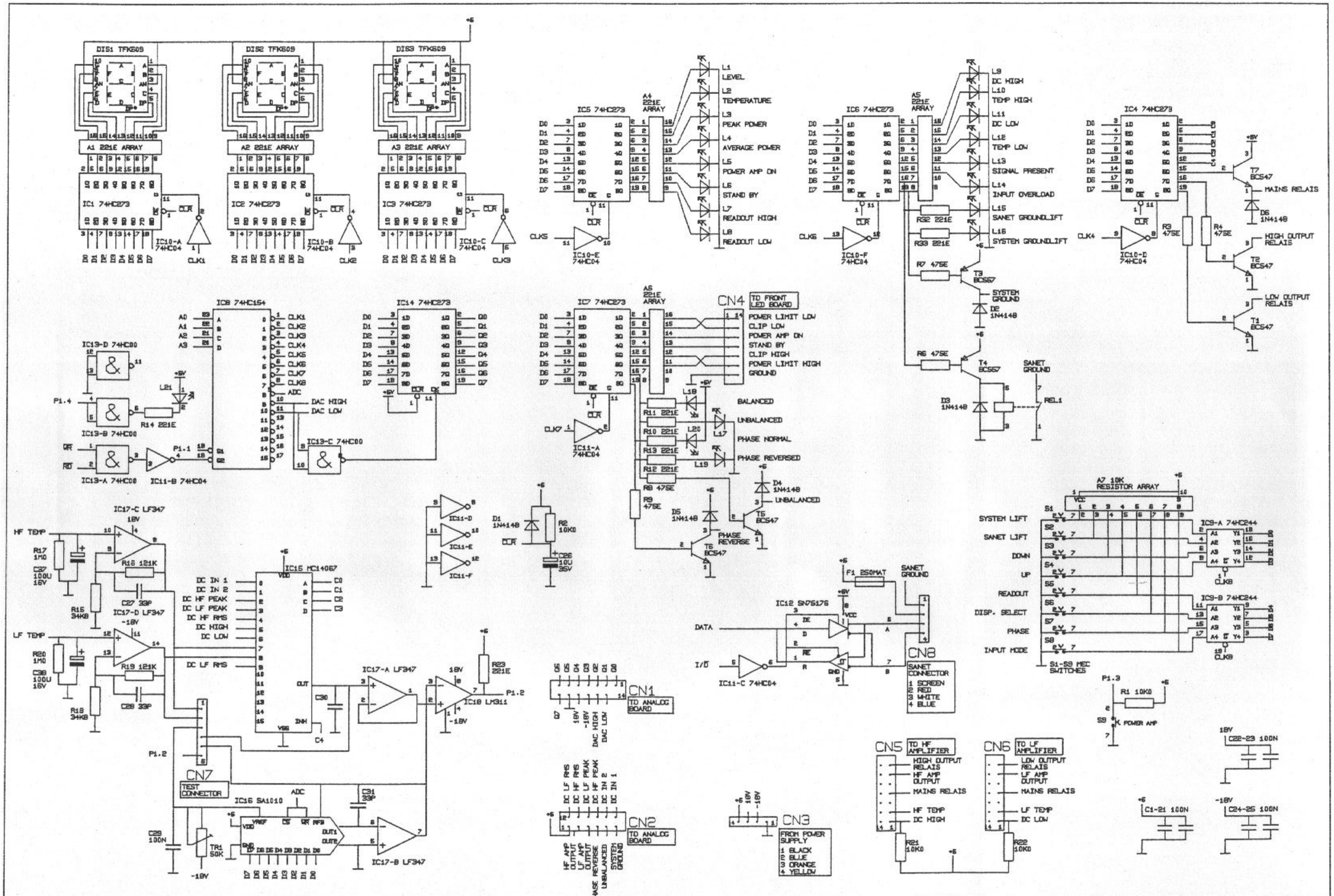
A1 DATE 21-03-89	SHEET OF



digital circuit /2
page 21

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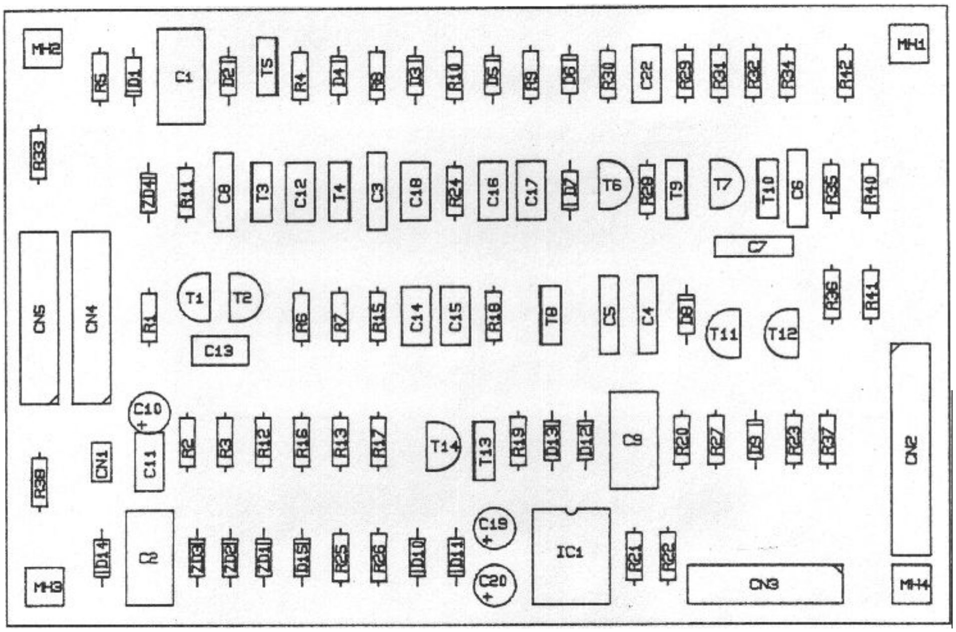
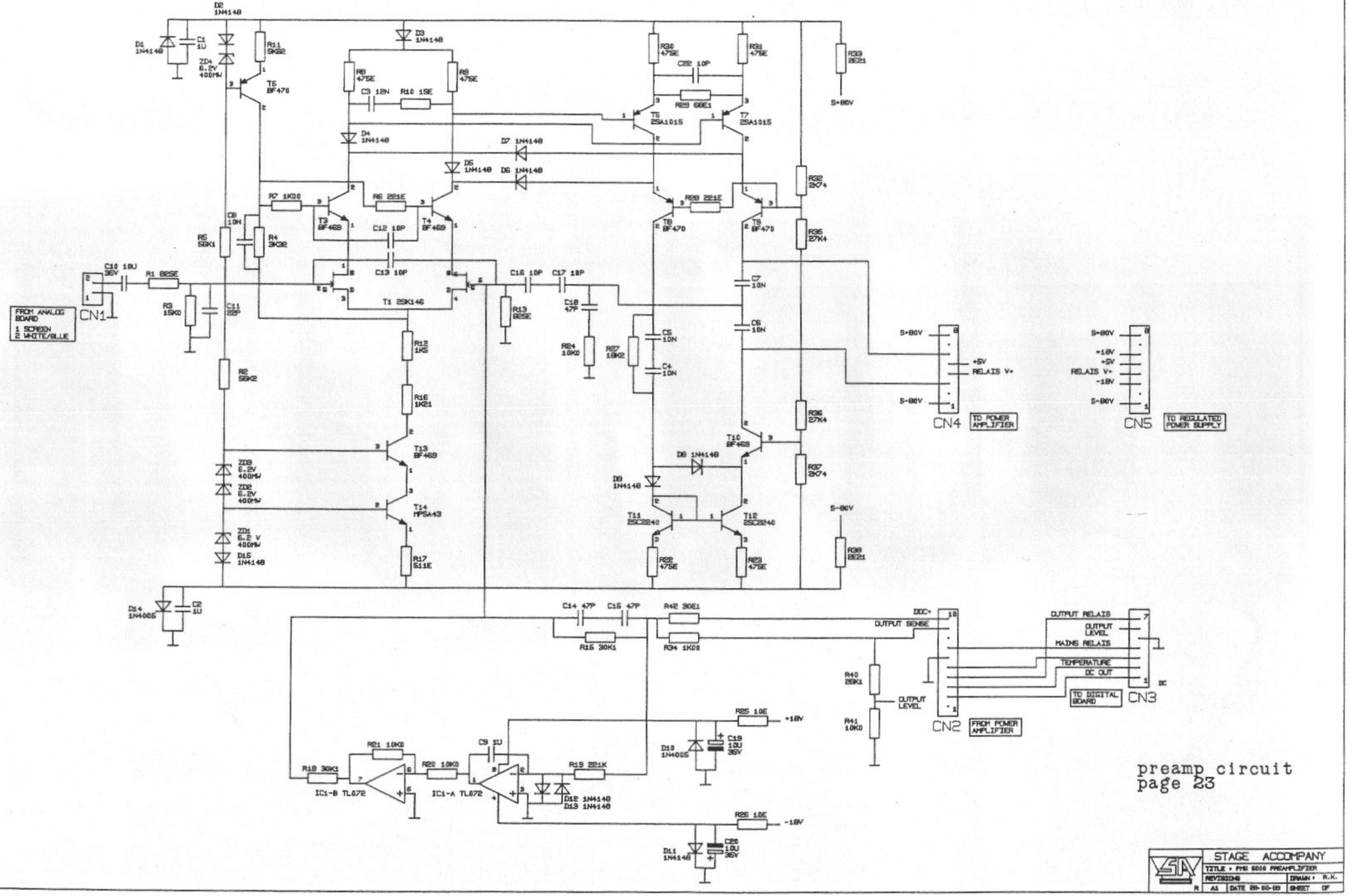
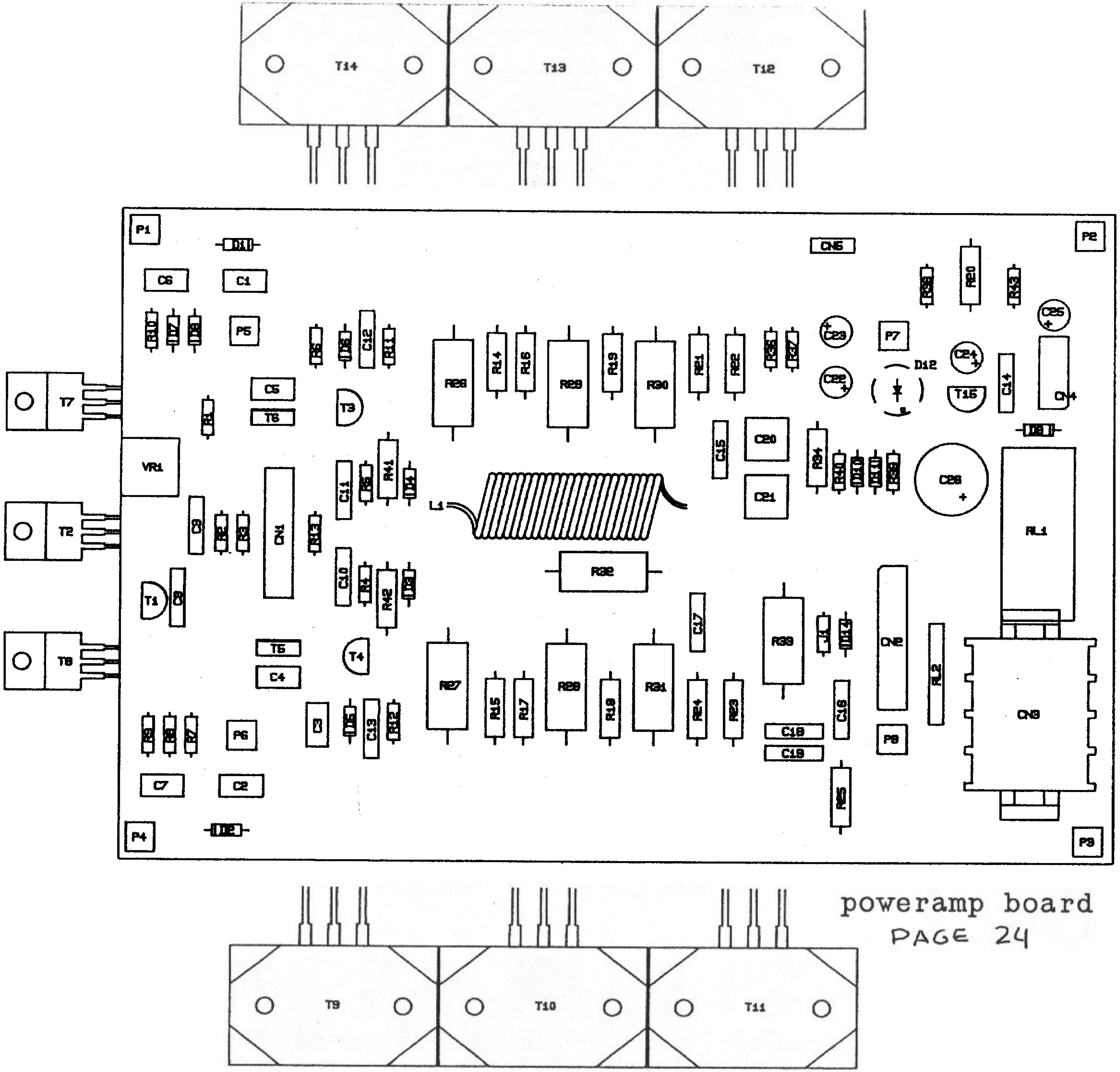


PAGE 22 preamp board

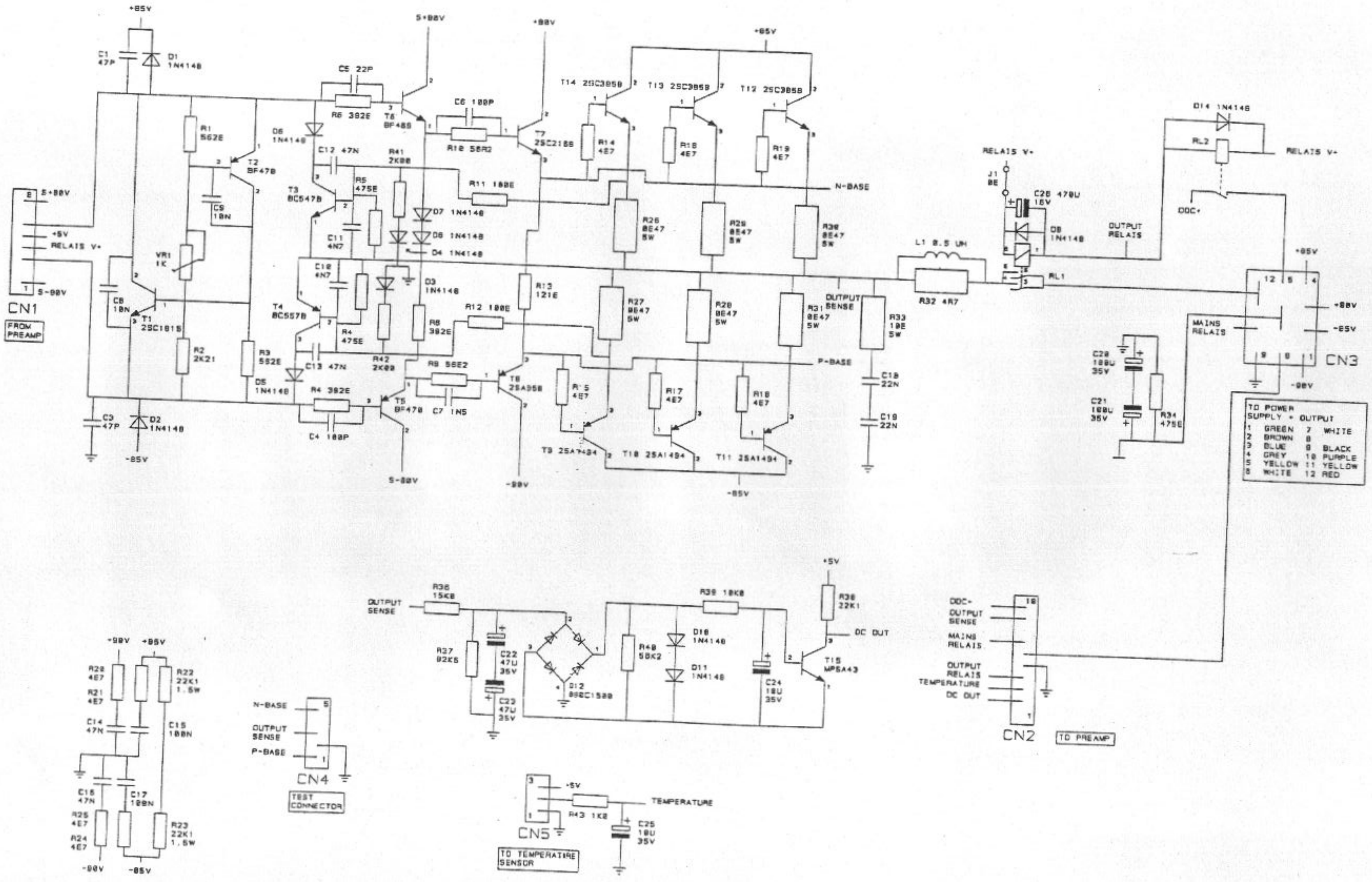


preamp circuit
page 23



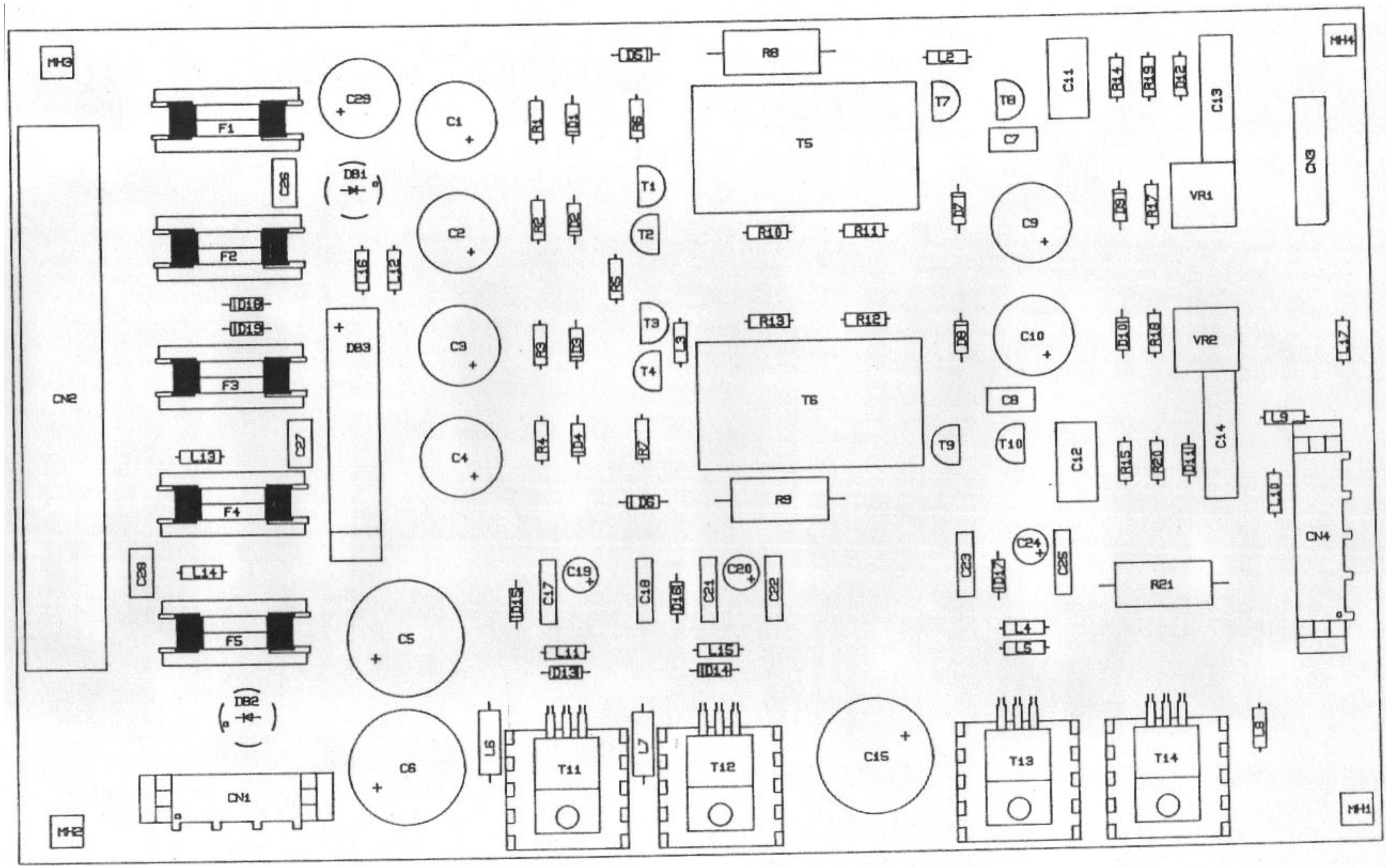
poweramp board

PAGE 24

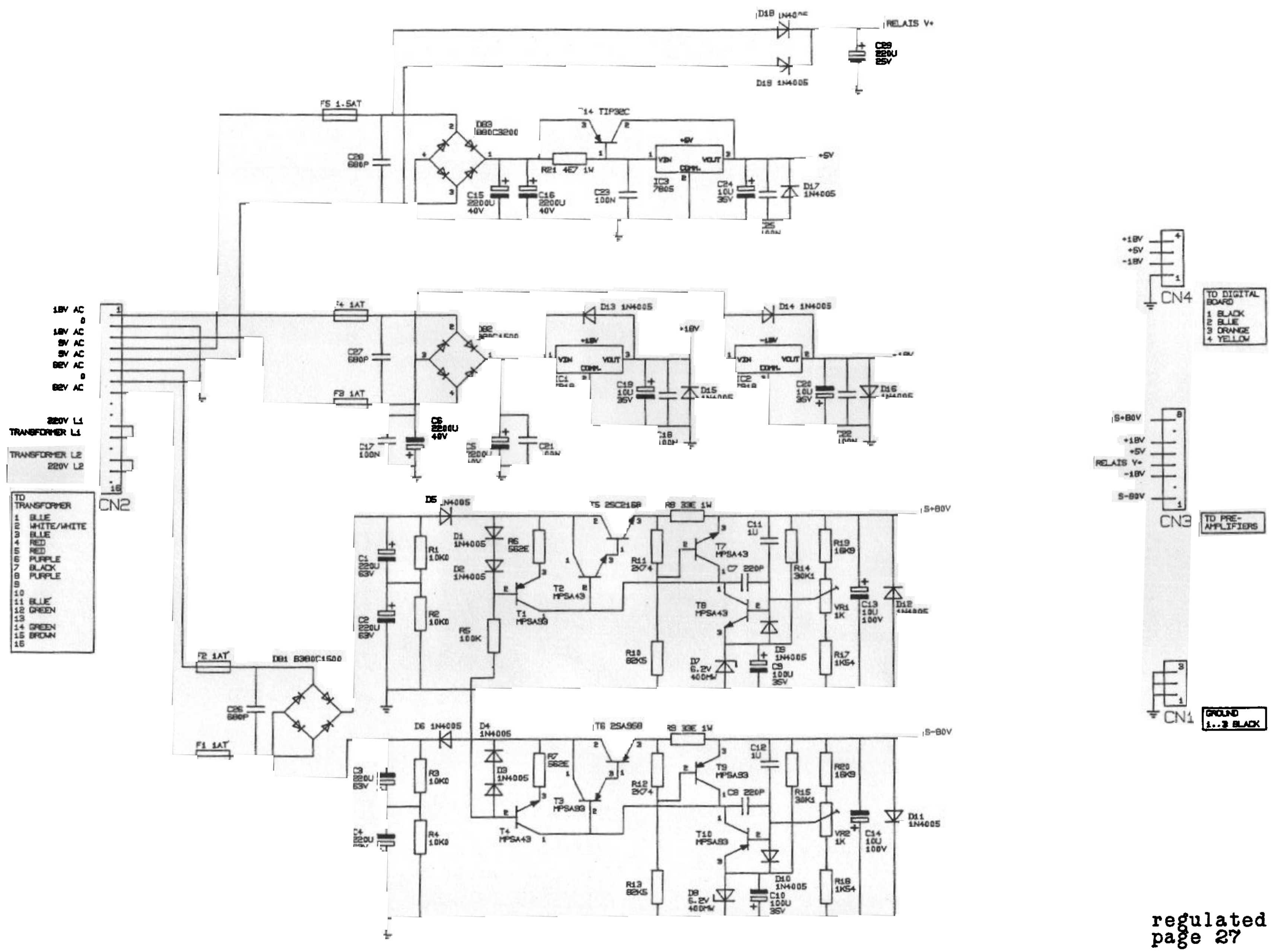


POWER AMP CIRCUIT
PAGE 25

STAGE ACCOMPANY

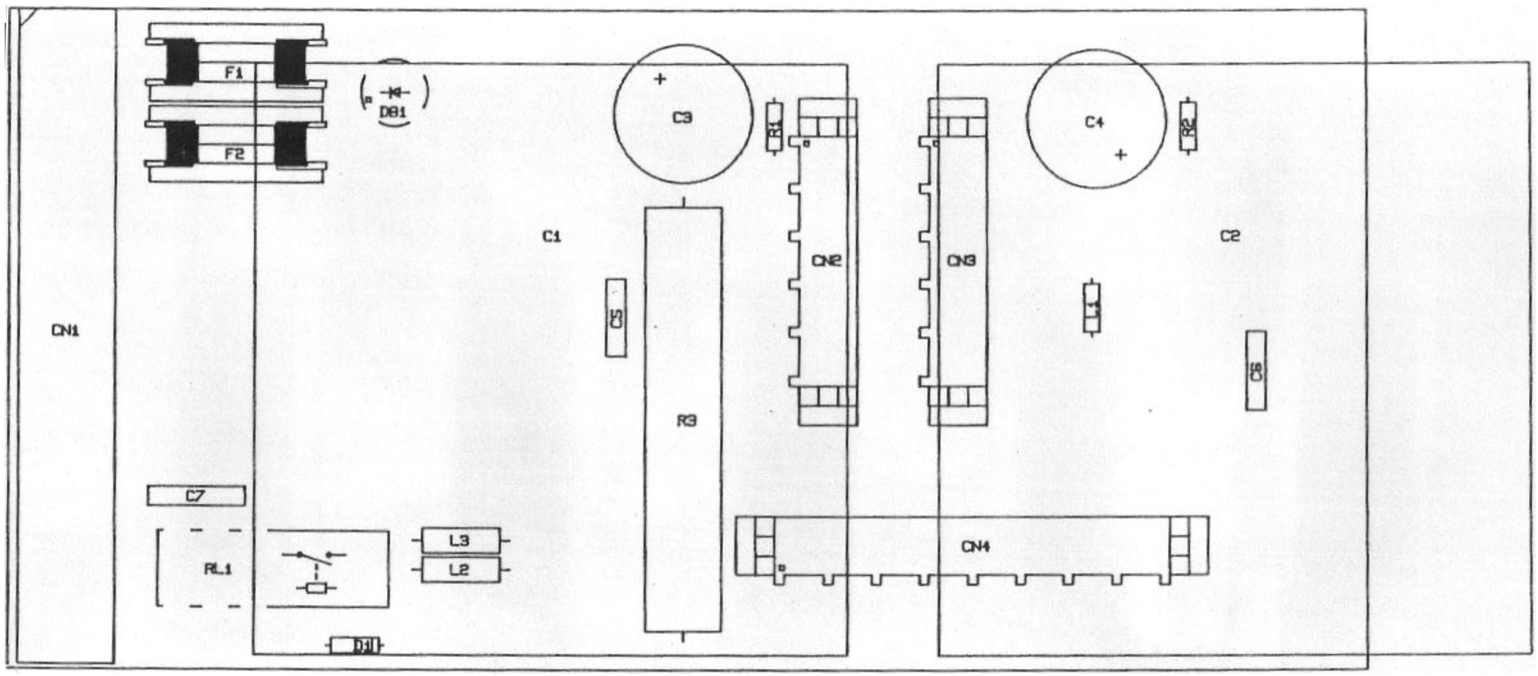


PAGE 26 regulated power supply board

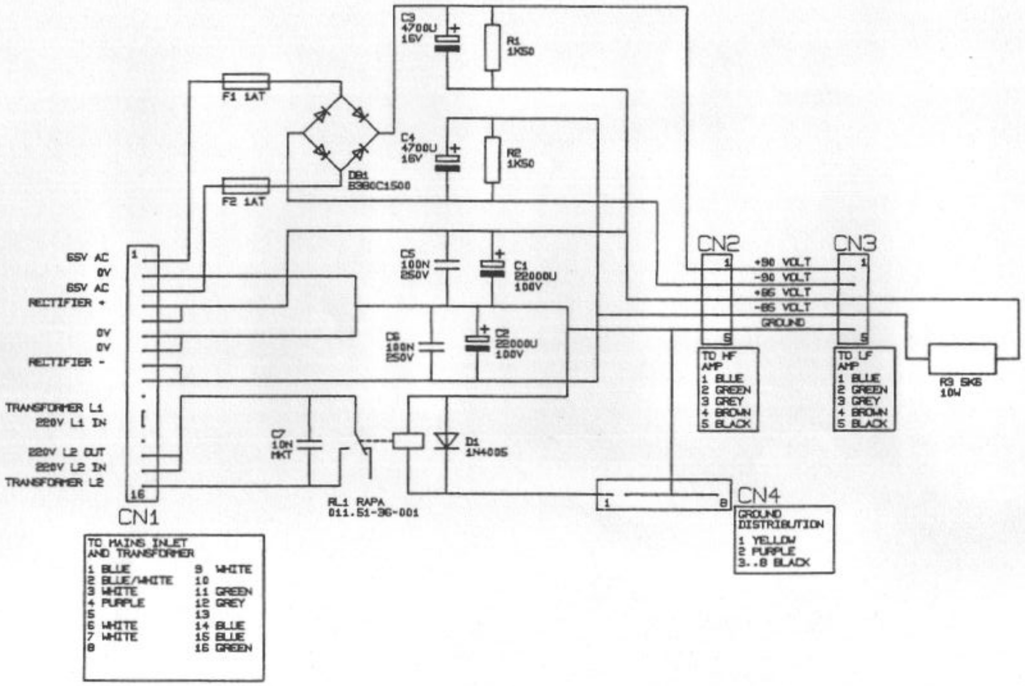


regulated power supply
page 27

STAGE ACCOMPANY



power supply board



power supply
page 29

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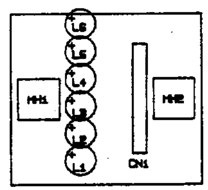
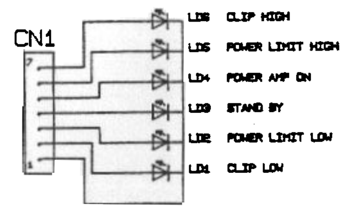
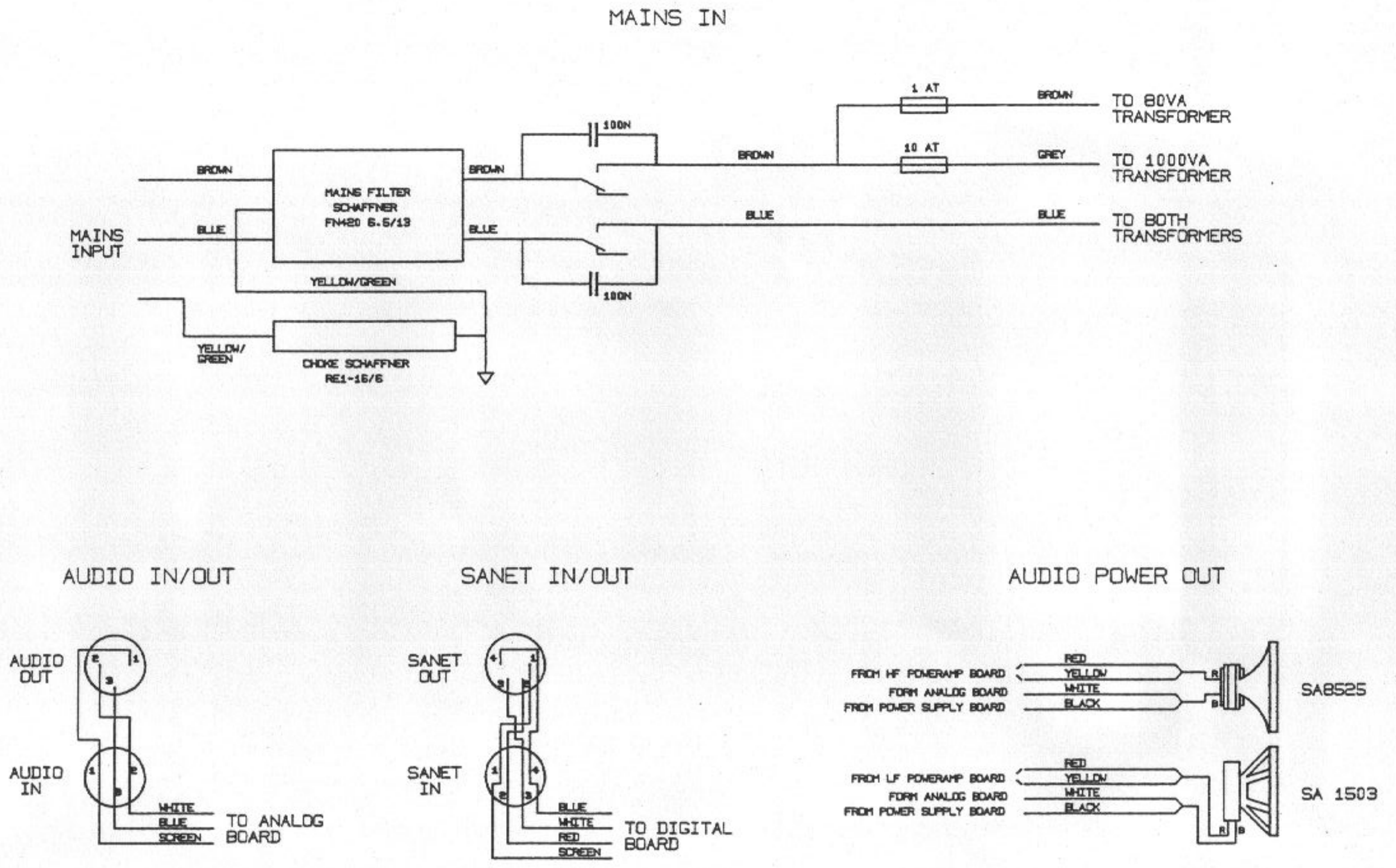




led board
page 30

STAGE ACCOMPANY
A4



input/output connections
page 31

STAGE ACCOMPANY	
TITLE : PMS [illegible] IN AND OUTPUTS	
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7 Basic operation of the software

This chapter explains the basic changes in the PMS 5000 when a button is touched or a safety margin has been exceeded.

Display select

With this button, the contents of the 7 segment displays can be selected. There are 4 possible selections:

- input level (attenuation in dB), indicated by L1
- temperature (in degrees Celsius), indicated by L2
- peak power (in Watts), indicated by L3
- average power (in Watts), indicated by L4

Each item can be monitored for the high and low frequency amplifier separately (selected at 'readout select').
Depressing 'display select' for more than 1 second activates the lock function. The lock code can be selected with the up/down buttons. Depressing 'display select' again accepts the selected code and locks the PMS 5000.
Unlocking requires the same procedure.
These functions are accomplished through software and do not involve any changes in the hardware.

Input level up

The processor increases the digital value presented to IC7 or IC8 on the analog board, depending on the selection made at readout select. The analog result is decreased attenuation in dB steps which is attenuation is displayed in the input level display.
Pressing the up and down buttons simultaneously causes the input attenuators (both high and low) to mute immediately.
If the 'lock' function is selected, the lock code can be increased with this button.
If the 'power on delay' function is selected, the delay time can be increased with this button.

Input level down

The processor decreases the digital value presented to IC7 or IC8 on the analog board, depending on the selection made at readout select. The analog result is increased attenuation in dB steps which is displayed in the input level display.

If the 'lock' function is selected, the lock code can be decreased with this button.
If the 'power on delay' function is selected, the delay time can be decreased with this button.

Readout select

With this button, the display information source can be selected.
This is either the high or the low frequency amplifier. The current state is indicated by either L7 or L8.
Depressing the button for more than 1 second activates the 'power on delay' function.
No hardware changes are involved.

System mode

This button toggles both power amplifiers on and off.
From off to on, relay RL1 on the high power supply board is activated and L5 will be lit.
After 3 seconds, both relays RL1 and RL2 of the power amplifiers are activated.
From on to off, L6 will be lit and all previously mentioned relays are immediately disconnected simultaneously.

Phase

The phase button toggles REL1 on the analog board
In the normal mode L20 is lit, and pin 2 of the input XLR connector is the 'hot' terminal.
In the inverted mode, L19 is lit and pin 2 of the input XLR connector is the 'cold' terminal.

Input mode

This button toggles REL2 on the analog board.
In the balanced mode, L18 is lit and both 'hot' and 'cold' inputs are used.
In the unbalanced mode, L17 is lit. With 'phase' in the normal mode, REL2 shortcircuits the inverting input of IC1-b to ground. Pin 2 of the input connector is the unbalanced input. With phase in the inverted mode, pin 3 of the input connector is the unbalanced input.

System ground

This button affects REL3 on the analog board. REL3 connects the internal ground to the mains ground.
If L16 is lit, the internal grounding system is lifted from the mains ground.
If the button is pushed while switching the PMS 5000 on, this particular unit will 'master' all other Blue Boxes that are connected through SAnet.
This indicates that, whenever a button on the 'master' PMS (Blue Box) is pushed, all other connected PMS's (Blue Boxes) perform the same function.
E.g., the master PMS 5000 is set in 'power amp on' mode with the 'system mode' button. All other connected PMS 5000's switch to 'power amp on', no matter if they were already 'on' or 'stand by', with respect to the programmed 'power on delay' time (which can not be altered with the master mode function).

SAnet ground

With this switch, the ground of the SAnet system can be disconnected from the system ground by means of REL1 on the digital board. Ground lift is indicated by L15.

DC detection at the amplifier outputs

If DC has been detected at one of the amplifier outputs, the processor releases RL1 and RL2 on the power amplifier boards.

Detection of high temperatures

If the output transistors have reached a temperature of 85 °C, the processor mutes the input signal, by means of IC7 and IC8 on the analog board.
If the temperature reaches 90 °C, the power amplifiers are switched into 'stand by' mode. RL1 on the high power supply board is released.
Input level and 'power on' mode are restored at 80°C.

Exceeding the maximum power

If the processor detects an average voltage of more than 34 Volt for the low amplifier or 17 Volt for the high amplifier, the input level is proportionally reduced by means of the input attenuators (IC7 and IC8 on the analog board). A special, software based algorithm is used, which does not affect transient response but reduces the output power to the drivers' maximum continuous level.

9 Adjustments

After maintainance or repair, all adjustable signals should be checked and re-adjusted if necessary.
All adjustments are performed with input levels at 0 dB, 'power on' mode, normal phase and balanced input mode.

***1 AD converter reference voltage**

input voltage:	0
output load:	open
adjustment location:	TR1 on the digital board
instrument:	DC volt meter
measure location + :	IC16 pin 15
measure location - :	IC16 pin 3
value:	-5.12 V ± 0.05 V

***2 Common mode rejection**

input voltage:	5 Veff, 400 Hz on pin 2 and pin 3 in phase
output load:	open
adjustment location:	TR1 on the preamp board
instrument:	AC volt meter or scope
measure location + :	IC1 pin 7
measure location - :	IC7 pin 3 (GND)
value:	minimal reading, ≤ 0.5 mVeff

***3 +80 V supply**

input voltage:	0
output load:	open
adjustment location:	VR1 on the regulated supply board
instrument:	DC volt meter
measure location + :	C13 +
measure location - :	C13 -
value:	80 V ± 0.5 V

***4 -80 V supply**

input voltage:	0
output load:	open
adjustment location:	VR2 on the regulated supply board
instrument:	DC volt meter
measure location + :	C14 +
measure location - :	C14 -
value:	80 V ± 0.5 V

*5 Bias current HF amplifier

input voltage:	0
output load:	open
adjustment location:	VR1 on the HF power amplifier board
instrument:	DC volt meter
measure location + :	T12 3
measure location - :	T11 3
value:	0.03 V ± 0.005 V at 40 °C

6 Bias current LF amplifier

input voltage:	0
output load:	open
adjustment location:	VR1 on the LF power amplifier board
instrument:	DC volt meter
measure location + :	T12 3
measure location -	T11 3
value:	0.03 V ± 0.005 V at 40 °C

10 Final test after maintainance

For a final test of the amplifier module, a signal generator, a level meter/distortion analyser, a PC fitted with a SAnet interface card and the STAGE ACCOMPANY software program TESTDEV.EXE are required. Disable the power limiters by pushing the <phase> and <input mode> buttons simultaneously, while turning the mains switch on.

First check the maximum output power of the amplifiers. Apply an 1 kHz input signal, connect two 8 Ω dummy loads to the output and measure the output voltage. This should at least be 49 V RMS single channel or 45 V RMS both channels driven. Note that the display will show different powers for high and low because of the normally different impedances of the HF and LF drivers.

Next check the frequency response. This should be done at an output level of 10 V with an 8 Ω load on both the outputs. A typical frequency response is shown in figure 9.
Final test norms are:

20 Hz -> 1 kHz   -6 dB for the low frequency amplifier
1 kHz -> 80 kHz +3/-10 dB for the high frequency amplifier

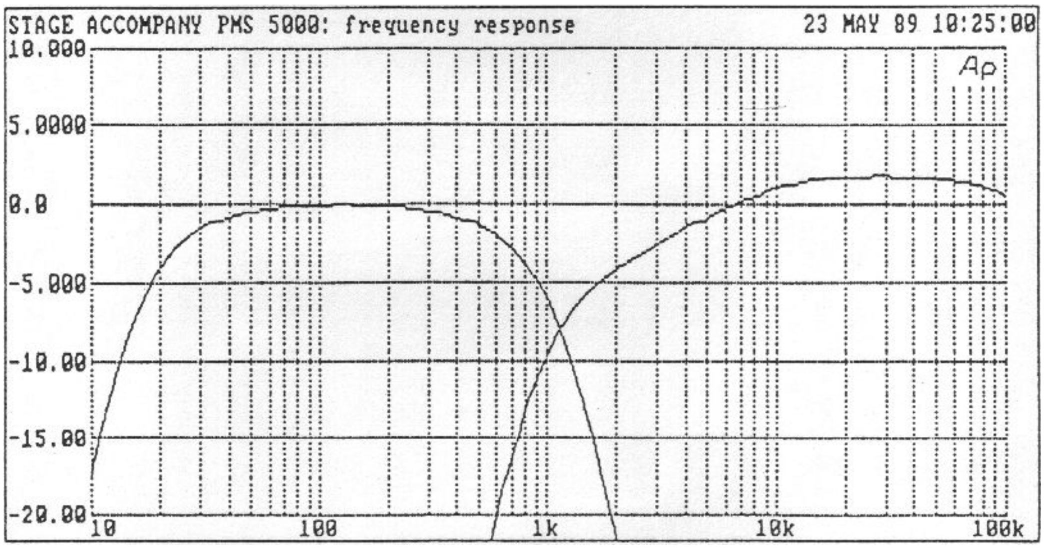


Fig 9 Typical frequency response

Note that:
- The high frequency level is about 2 dB higher due to sensitivity differences between high and low frequency transducers.

- The low cut slope of the high pass filter is influenced by a horn correction network (R24, R25, C50 at page 18).

Next check harmonic distortion. Final test norms are:

U_{out} = 10 V into 8 Ω
THD + N   25 Hz -> 1200 Hz   ≤ 0.01 %
THD + N   1200 Hz -> 20 kHz   ≤ 0.02 %

A typical distortion graph is shown in fig. 10. An 80 kHz low pass filter is used to eliminate HF processor noise out of this test.

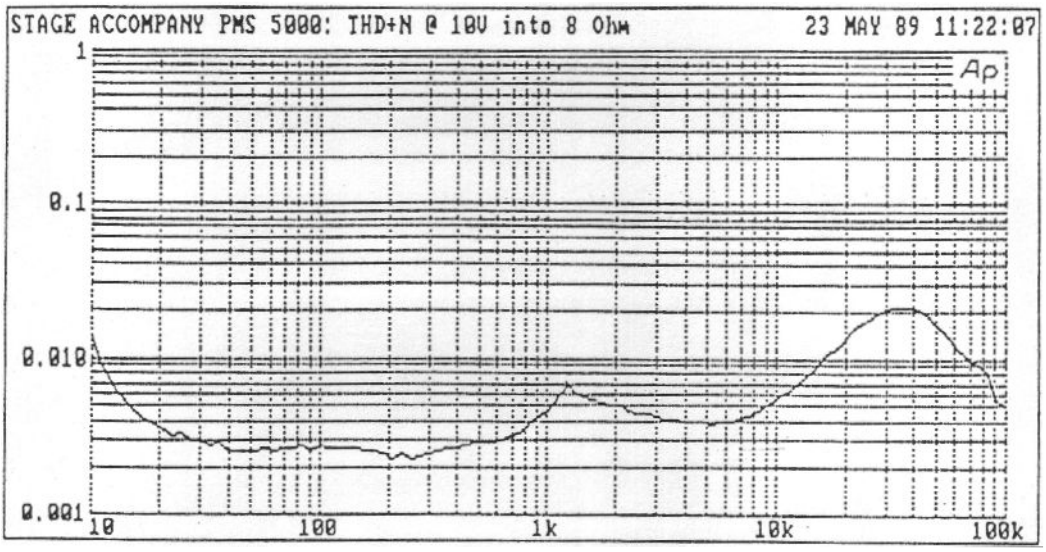


Fig 10   Typical harmonic distortion at 10 V / 8 Ω

The total noise level of the PMS 5000 should be less than 110 dB under 50 V output level (10 Hz to 20 kHz). For this test, a 600 Ω resistor should be placed between pin 2 and pin 3 of the XLR input connector. The best way to test output noise is to measure frequency response without an input signal. A typical graph is shown in fig. 11.

Next test the common mode rejection. A typical performance graph is shown in fig. 12. The norms are:

CMRR:	≥ 65 dB	400 Hz
	≥ 35 dB	20 kHz

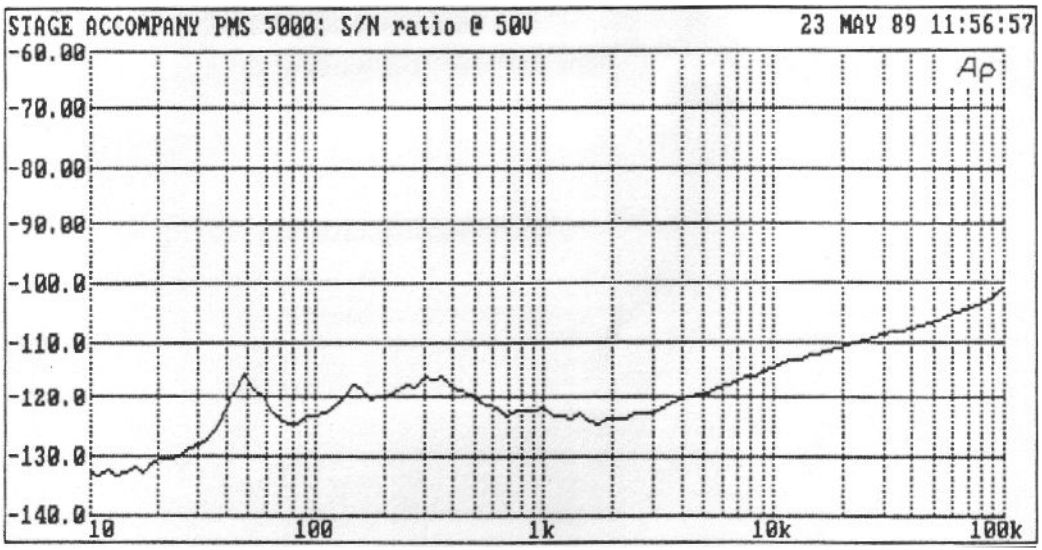


Fig 11 Output noise versus frequency, @ 0 dBm

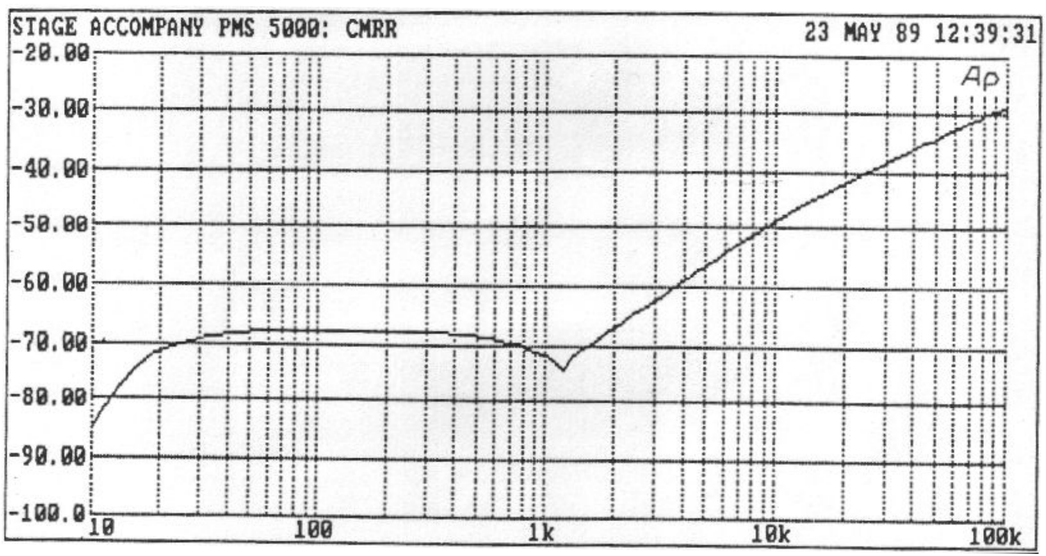


Fig 12 Typical CMR versus frequency

Next make the SAnet connection between the PMS 5000 and the PC and run the TESTDEV.EXE program. Follow the instructions on your screen. TESTDEV runs a variety of tests on the PMS 5000, such as display tests and button tests. The program automatically displays, whether the PMS 5000 is ok or not.

11 Specifications

Maximum input level:	+20 dBm (0 dBm = 0.775 V)
Maximum output level:	120 dB continuous, 130 dB peak
Input impedance:	30 kΩ (25 kΩ unbalanced)
Input sensitivity:	+ 6 dBm
Frequency response:	30 Hz - 30 kHz, -3 dB
noise output:	< 5 dBA PWL
S/N ratio	> 100 dB
CMR ratio:	> 65 dB, 400 kHz
THD + N:	< 0.01 %, 20 Hz - 20 kHz
IMD:	< 0.01 %, 2 kHz - 20 kHz
Slew rate:	40 V/uS
Power consumption:	75 VA standby, 600 VA max

11 Flash Eprom redesign and new analog board

All Blue Boxes with serial number 2000 and higher are equiped with newly designed analog and digital boards.

digital board

The major changes on the digital board are:

* The Eprom has been replaced by a Flash Eprom. The Blue Box software can now be downloaded through SAnet.
* NiCad battery BAT1 has been replaced by a lithium one.
* The power down RAM protection has been replaced by an integrated circuit.
* The SAnet groundlift relay has been replaced by a heavy duty type.

The Blue Box is put into "boot mode" by depressing the two ground lift buttons simultaneously, while turning the mains switch on.
The new component layout and schematics can be found on page 43, 44 and 45.

analog board

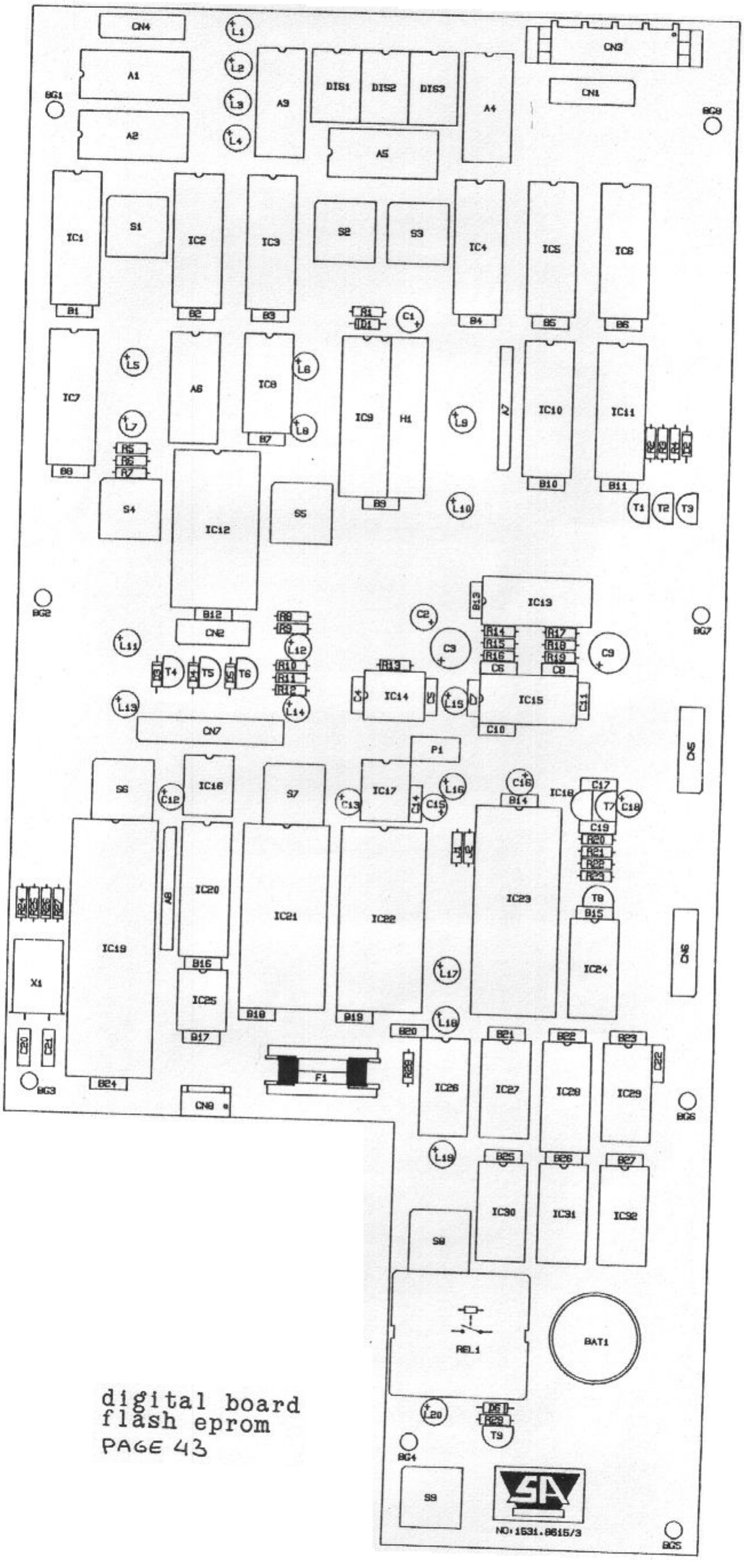
There are some slight changes on the analog board:

* The ground lift relay is replaced by a heavy duty type.
* Capacitors C48 and C49 (previously C50) are mounted on the board now.

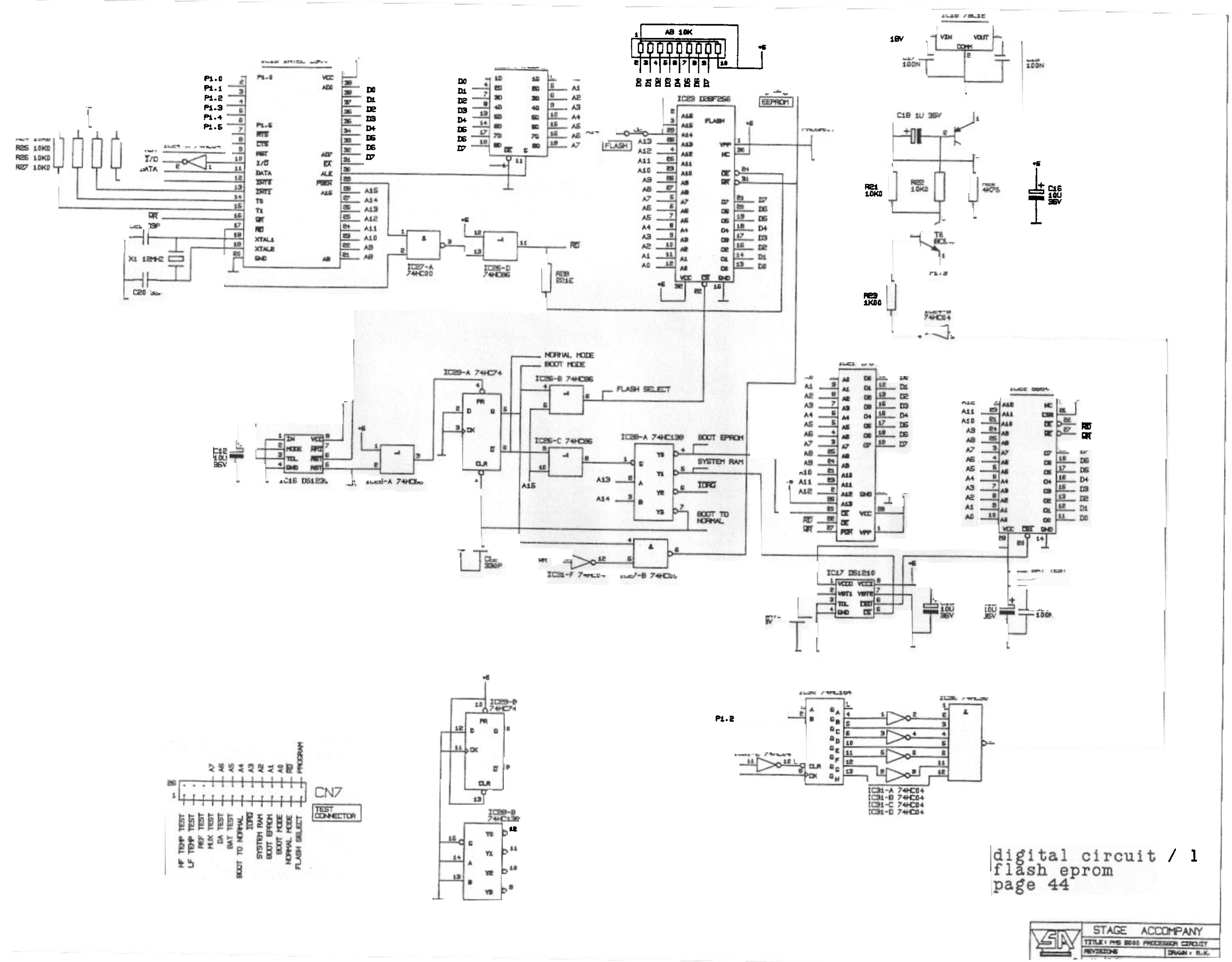
The new component layout and schematics can be found on page 46 and 47.

Important

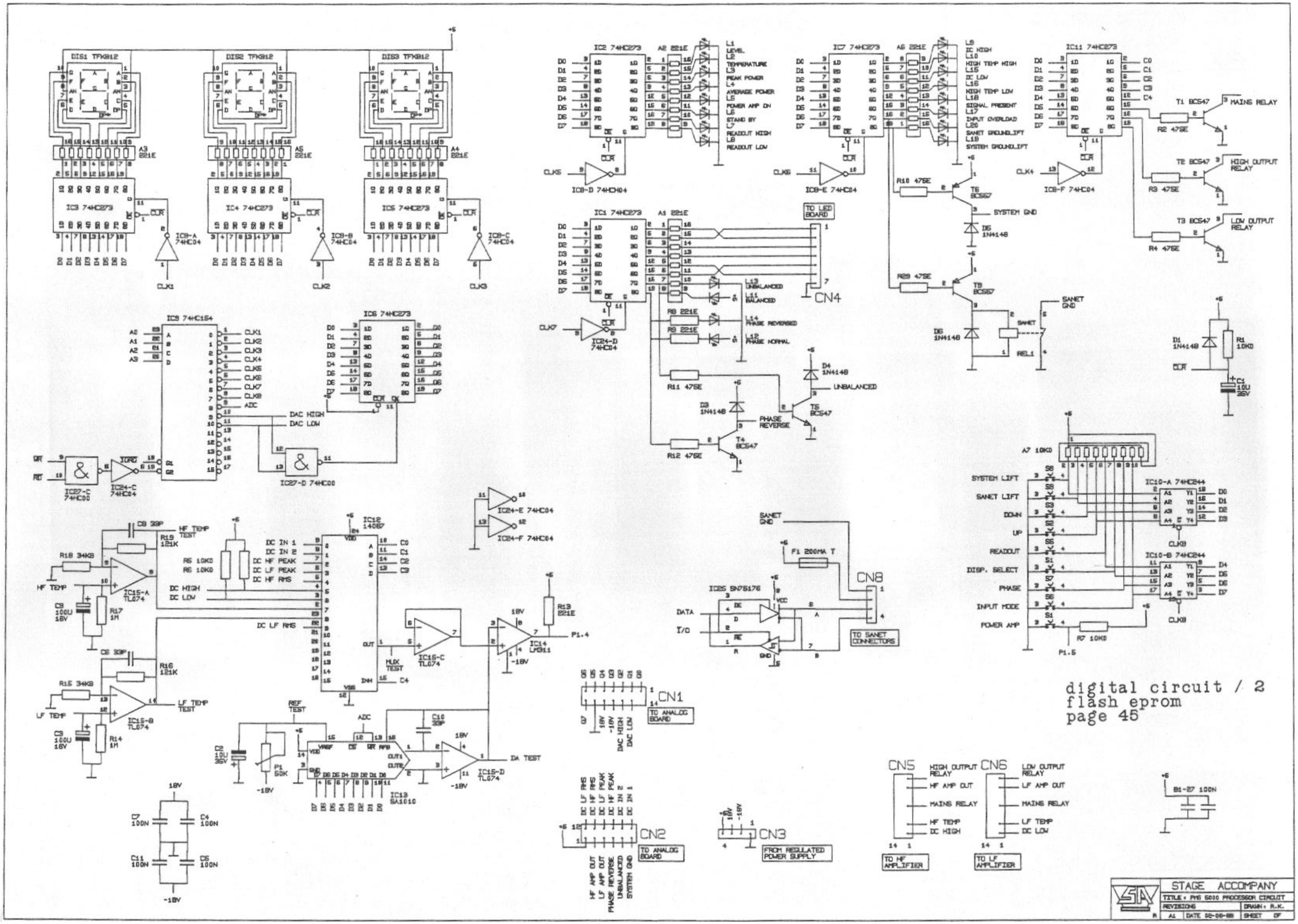
The new digital board can be exchanged without any problem in any Blue Box from serial number 340 or higher.
The analog board can be placed into any version without modifications.

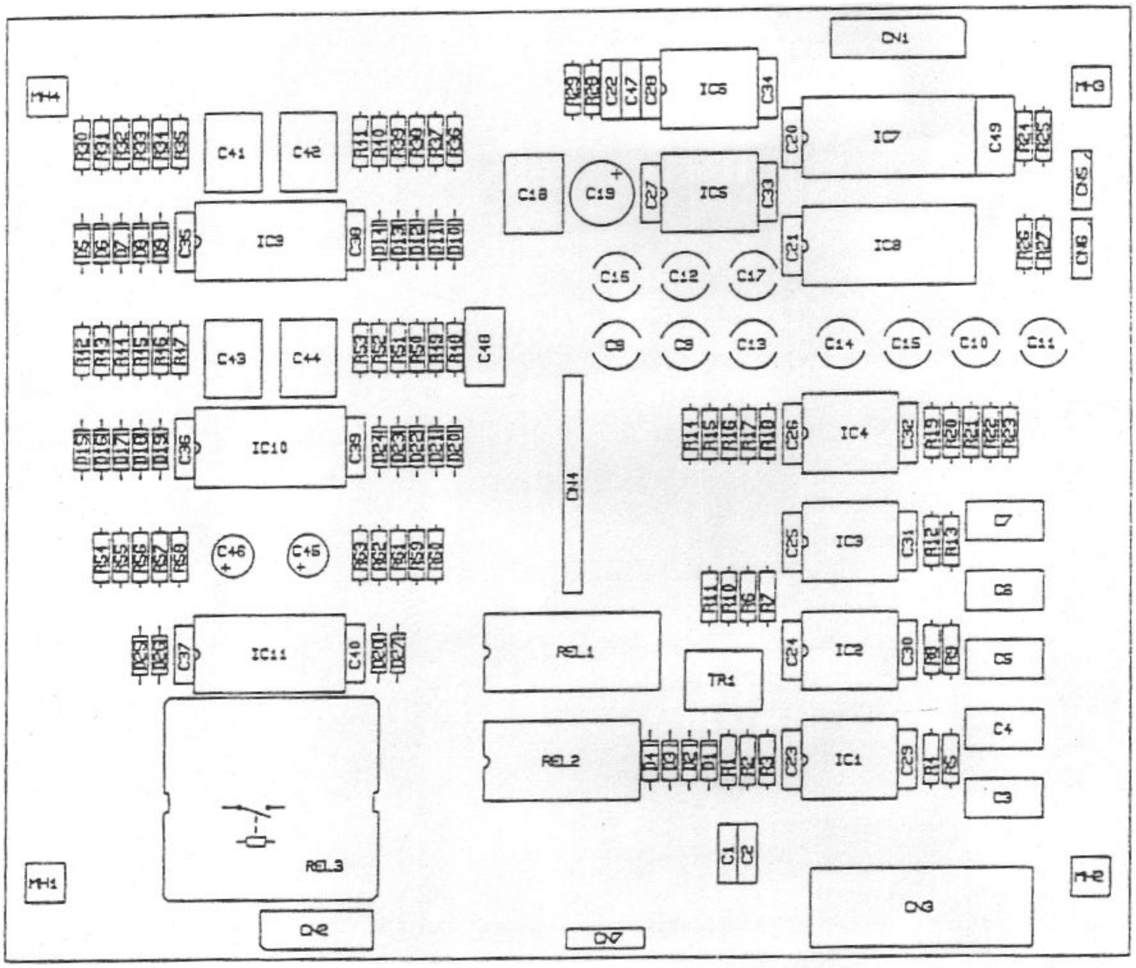


digital board
flash eprom
PAGE 43

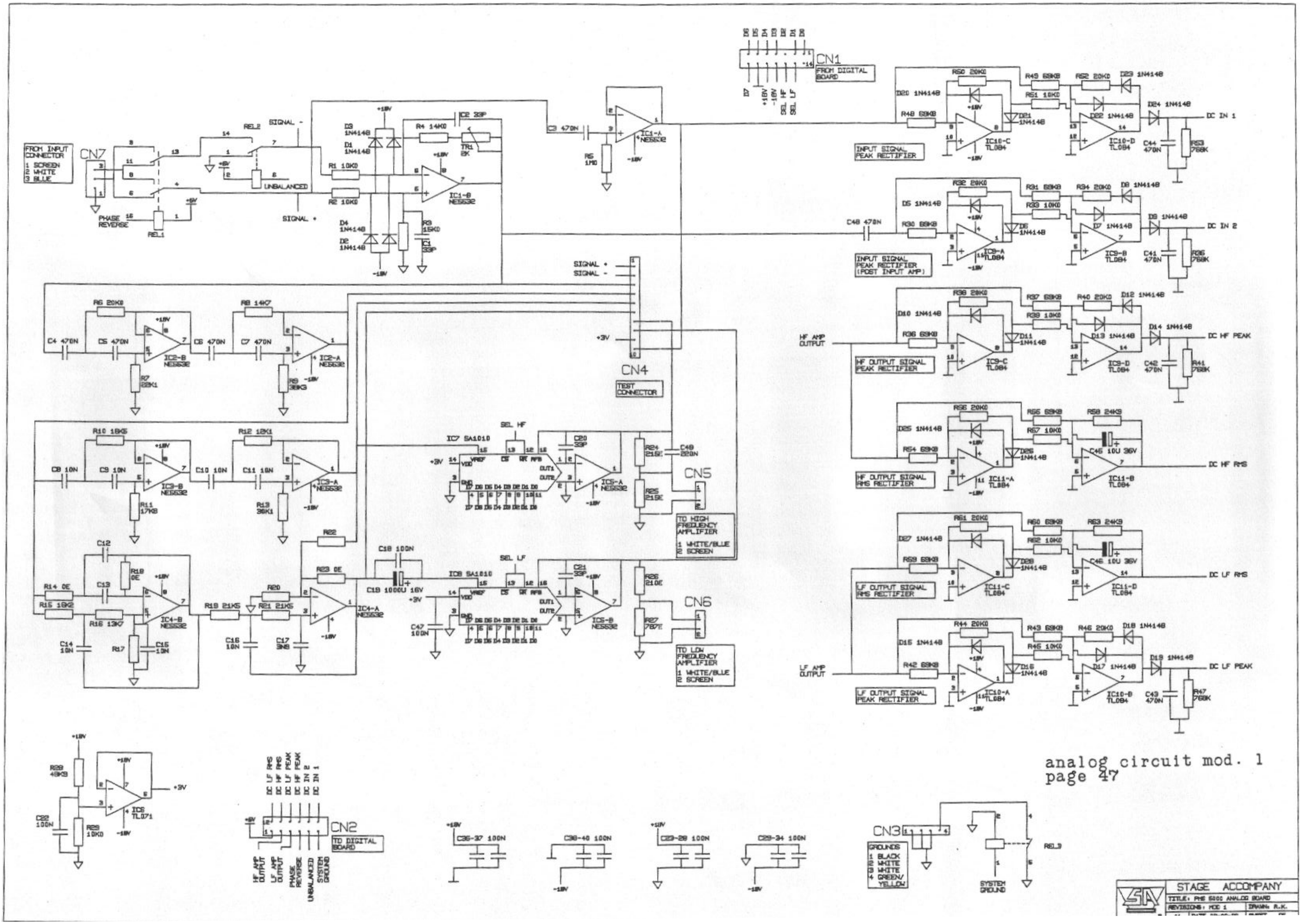


digital circuit / 1
flash eprom
page 44


digital circuit / 2
flash eprom
page 45
STAGE ACCOMPANY
TITLE: PMS 5000 PROCESSOR CIRCUIT
REVISIONS
DRAWN: R.K.
CN1
TO ANALOG BOARD
CN2
TO ANALOG BOARD
CN3
FROM REGULATED POWER SUPPLY
CN4
TO LED BOARD
CN5
TO HF AMPLIFIER
CN6
TO LF AMPLIFIER
CN8
TO SANET CONNECTORS



analog board mod. 1



analog circuit mod. 1
page 47

12 Modifications for the SA 8535 compact driver

12.1 X-over

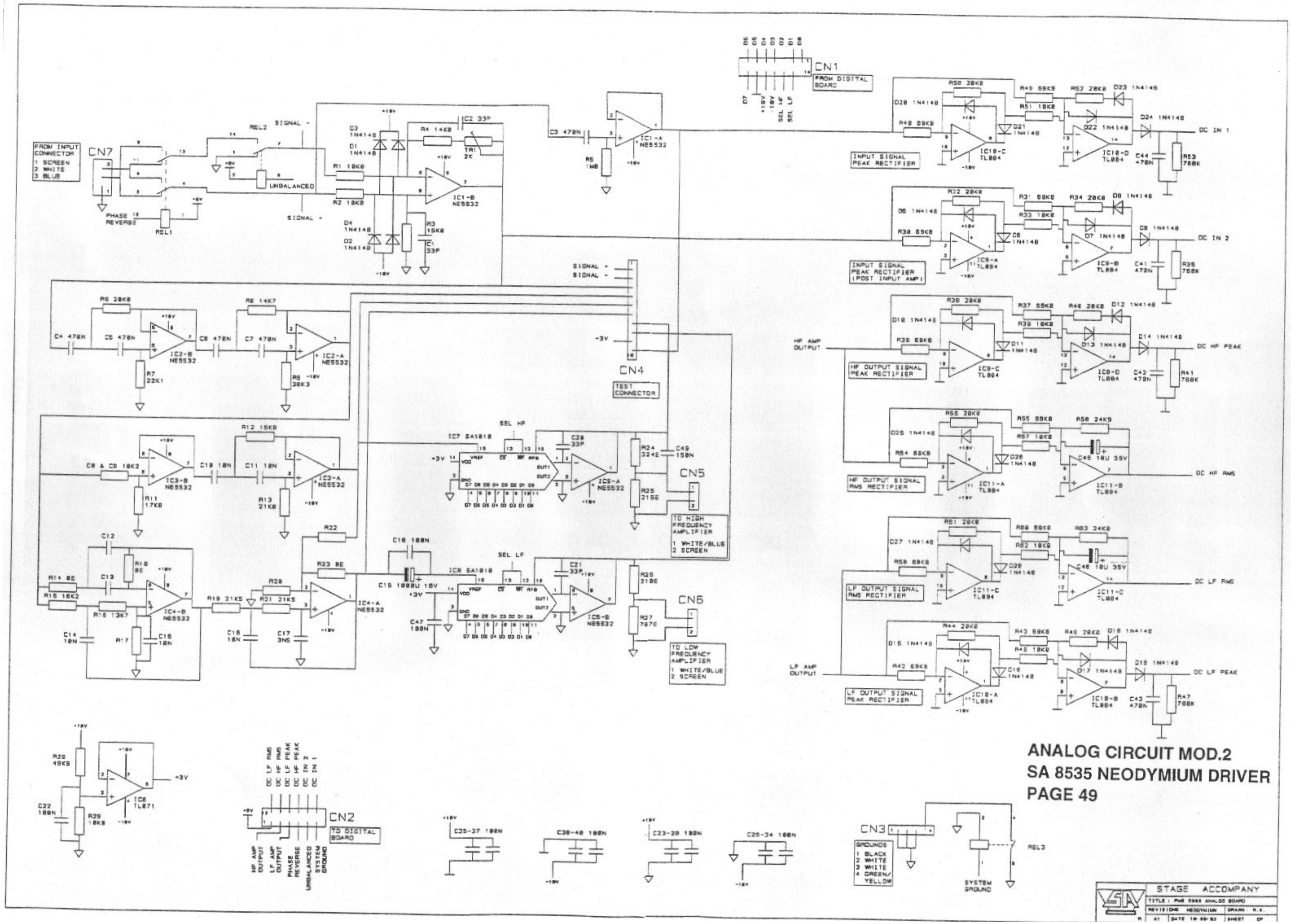
With the introduction of the SA 8535 driver in the Blue Box, some minor changes have taken place in the X-over of the PMS 5000 amplifier module.
These changes have all taken place on the "analog board" and are as follows (see page 49):
* C8 and C9 have disappeared and have been replaced by a single resistor.
* R12, R13, R24 and C49 have been replaced by different values.
* R10 (not vissible on the drawing of page 49, see page 47) has disappeared.

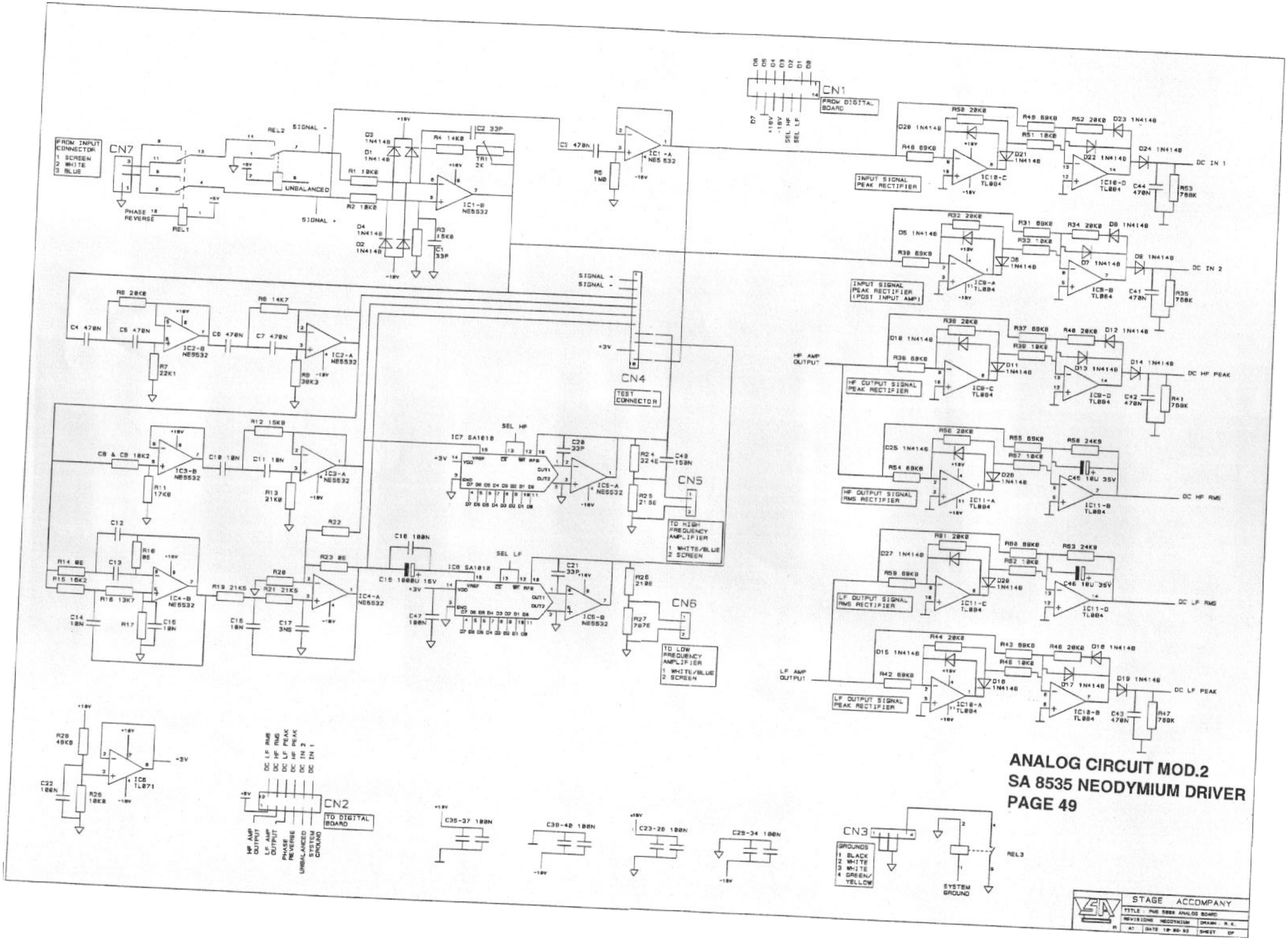
The changes have become standard for every module with a serial number higher than 300000000. The above configuration is supported by the new software version V6.0.

All Blue Boxes with software version 4.8 or higher can be upgraded with a SA 8535 driver and should have the above modifications including a software update to 6.0.

12.2 Power supply

Apart from these modifications for the SA 8535 driver, two parts in the power supply have been changed as well (see page 29).
C3 and C4 were previously 16V models and have been replaced by 25V models. The new 4700 uF/25V capacitors fit in the same space as the older ones.
When problems occur with the 16V capacitors (recognised by an expanded can or blown F1 & F2 fuses), they should be replaced by 25V types. Order number for the part is 1010.4M7/26 (26 is no mistake!).
25V capacitors are factory mounted on all PMS 5000 modules with a serial number equal to or higher than 206022364.


ANALOG CIRCUIT MOD.2
SA 8535 NEODYMIUM DRIVER
PAGE 49
STAGE ACCOMPANY
INPUT SIGNAL PEAK RECTIFIER
INPUT SIGNAL PEAK RECTIFIER (POST INPUT AMP)
HF OUTPUT SIGNAL PEAK RECTIFIER
HF OUTPUT SIGNAL RMS RECTIFIER
LF OUTPUT SIGNAL RMS RECTIFIER
LF OUTPUT SIGNAL PEAK RECTIFIER
DC IN 1
DC IN 2
DC HF PEAK
DC HF RMS
DC LF RMS
DC LF PEAK
CN1 FROM DIGITAL BOARD
CN2 TO DIGITAL BOARD
CN3 GROUNDS 1 BLACK 2 WHITE 3 WHITE 4 GREEN/YELLOW
CN4 TEST CONNECTOR
CN5 TO HIGH FREQUENCY AMPLIFIER 1 WHITE/BLUE 2 SCREEN
CN6 TO LOW FREQUENCY AMPLIFIER 1 WHITE/BLUE 2 SCREEN
CN7 FROM INPUT CONNECTOR 1 SCREEN 2 WHITE 3 BLUE



ANALOG CIRCUIT MOD.2
SA 8535 NEODYMIUM DRIVER
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