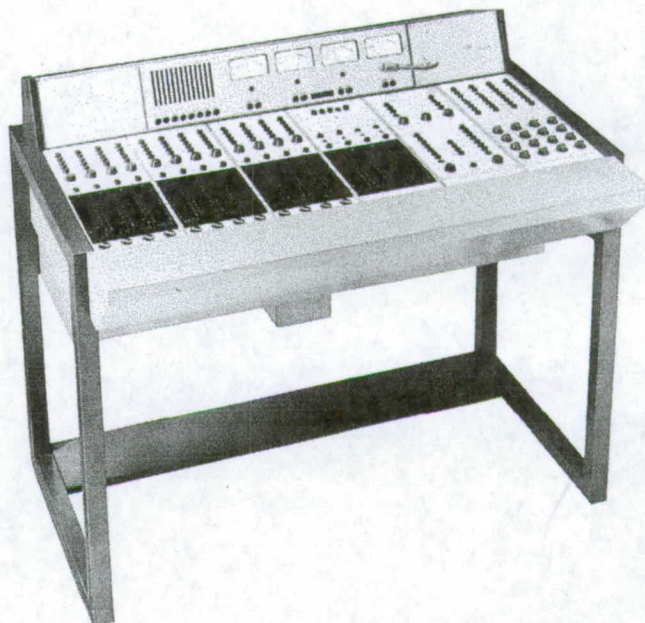


FEATURES:

- Maximum of twenty-four inputs to twelve input channels.
- Up to four independent output channels. (for stereo and multi-track recordings)
- Reverberation send and return control built-in.
- Current dependent mixing with resistive net-works.
- Monitoring and pre-listening provided.
- Optional equalizer block, with four equalizers, switchable to eight input channels.
- Solid-state plug-in electronics.



In recent years demand has increased for small, easily handled mixing desks with switching facilities and flexibility for sound control in:

- program production and release in small and medium-size radio and television studios.
- production of sound recordings for radio and TV in mobile broadcast units.
- large theaters where mixing desk serves as a control unit for special effects and background sound.
- production of multi-track recordings in film and sound dubbing studios.

A basic feature in the design of the MD Series of Solid State mixing desks is the use of channel blocks. This system was adopted because it is the only one affording good flexibility, increased assembly and switching possibilities, plus easy maintenance and servicing.

Mixers in the MD-range are constructed as a combination of four standard plug-in blocks (one of which is optional) and two amplifiers for secondary circuits, mounted together in a standard

frame. Because of their limited number, the blocks are produced in large quantities, and therefore, are supplied at an attractive price. The electronic circuitry has been designed for current dependent mixing to the bus-bars. This contributes largely to the flexibility, a quality vitally necessary in many applications.

The amplifiers use plug-in, solid-state printed circuit boards. Advanced amplifier techniques can be applied without changing the basic design of the mixers.

The validity of the principles underlying the MD system is clearly proved by the fact that the basic MD design has remained unaltered. There is no essential difference between this new range of mixers and former models, now in use for a number of years in all parts of the world. The combination of new amplifier technics and modern design form the basis of this new series. As a result, the third generation of this equipment consolidates the position of the MD mixers as the most advanced sound control equipment in its class.

HIGHLIGHT CHARACTERISTICS

Current dependent mixing

In contrast to voltage dependent mixing, which is usually employed, current dependent mixing allows full acceptance of additional input blocks without re-adjustment of bus-bar impedance and intermediate amplifiers.

Up to 4 independent output channels

MD mixers are universally applicable. They are suitable for use in radio and television studios, where two outputs are generally required, and in recording studios, where multi-track technics call for three or four independent output channels. Stereo programs can also be accommodated.

Maximum of 24 inputs for 12 input channels

This number is adequate for most applications in a medium-size studio. In general, the minimum number of microphone inputs required is eight. However, for a progressive studio, it is of great advantage if the equipment can be instantly extended to twelve microphone inputs. The same is true for the line inputs; the number of these generally varies from four to ten or twelve.

Each channel switchable to 4 outputs simultaneously

When a channel is switched to more than one output at the same time, no crosstalk is introduced. Crosstalk damping is always better than 80 db. This facility is essential for studios working with several output channels in conference or "clean-sound" circuits, as in the relaying of programs overseas or when a chain of studios co-operates in the production of one program.

Four equalizers switchable to eight channels

MD mixers can be fitted with four equalizers to improve the sound quality in less favorable acoustic conditions. Equalizers provide for bass and treble control and presence. Unit is optional but space is reserved for it. Each MD desk can be extended with a plug-in of such a unit at any time.

Reverberation control in each channel

Each input channel has a reverberation send control fader. All reverberation send signals are mixed into a reverberation bus-bar with line output.

Separate reverberation return master channel

It is unnecessary to reserve one of the input channels for the control of the reverberation return signals. This is handled by a separate channel having level control and assignment switches to the mixing bus-bars.

Fingertip push-button control for Pre-listening

The monitor section of the MD desks includes a pre-listening push-button for each channel. All inputs can be checked instantly, without interfering with the program in any way.

Stereo or two-channel monitoring

This facility is essential where multi-track recording technics are used. Its availability here is an indication that the MD mixers are suitable for the handling of almost any kind of program. Four extra inputs to the monitoring circuitry are provided for the monitoring of external line signals (recorders). Consequently, no input channels are needed for monitoring these.

Insertion points

All input and output channels are provided with insertion points so that additional audio equipment — such as special equalizers, compressor and limiter amplifiers, etc. — can be switched into the circuits. On request these can be wired to terminals in the desk; for example, in the blind panel section at the left-hand side of the metering hood.

Sufficient space for later extensions

Ample space has been provided on the desk and inside for extensions and their controls, remote control system and amplifiers.

Push-buttons instead of rotary selectors

Push-button switches are used extensively to insure speed and ease of operation.

SPECIFICATIONS

INPUTS (balanced)

Microphone inputs

- Input impedance: $> 1200 \Omega$
- Nominal source impedance: 200Ω (50Ω on request)
- Nominal input level: -75 db , -60 db , -45 db (switchable)
- Overload reserve: 23 db

Line inputs

- Input impedance: approx. $20 \text{ k} \Omega$
- Nominal source impedance: $< 600 \Omega$
- Nominal input level: 0 db (other levels on request)

- Overload reserve: 23 db
- Reverberation return input
- Input impedance: $10 \text{ k} \Omega$
- Source impedance: approx. 600Ω
- Nominal input level: 0 db (other levels on request)
- Overload reserve: 15 db

Monitor inputs

- Input impedance: $> 10 \text{ k} \Omega$
- Nominal input level: $+ 6 \text{ db}$

OUTPUTS (balanced)

Line outputs

- Output impedance: $< 50 \Omega$
- Load impedance: 600Ω
- Nominal output level: $+ 6 \text{ db}$ (other levels on request)
- Overload reserve: 6 db

Reverberation send output

- Load impedance: approx. 600Ω
- Nominal output level: $+ 6 \text{ db}$
- Overload reserve: 6 db

Maximum gain

- $101, 86, 71$ and 26 db , depending on the setting of the input selector switch; with additional output amplifier the figures are up to 18 db higher.

Crosstalk between channels (5000 Hz): $> 80 \text{ db}$

- Maximum fader damping: $> 90 \text{ db}$
- Distortion at nominal levels: $< 0.5\%$

Noise

- Noise figure according to DIN 45405: $< 6 \text{ db}$
- R.M.A. referred to output: $> -120 \text{ db}$

Frequency characteristic

- ($40 \dots 15,000 \text{ Hz}$): $+ 0.5/- 1.5 \text{ db}$;
($+ 0.5/- 0.5 \text{ db}$ on request)

Maximum relative humidity: 95%

Power supply: $110, 125, 220$ and 245 v ; $40 \dots 60 \text{ Hz}$

Power consumption: approx. 60 w

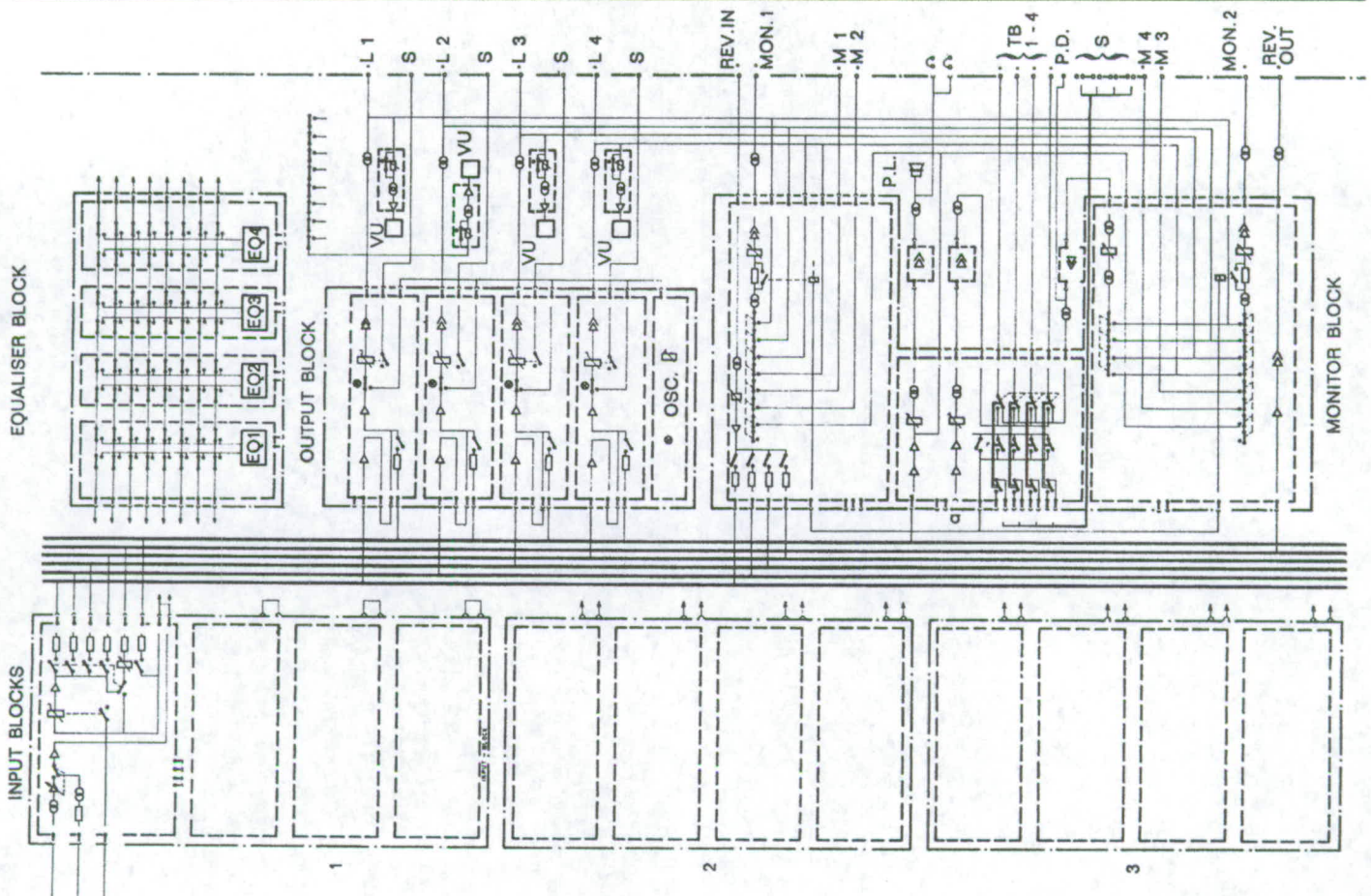
Terminals: screw-type blocks

Dimensions

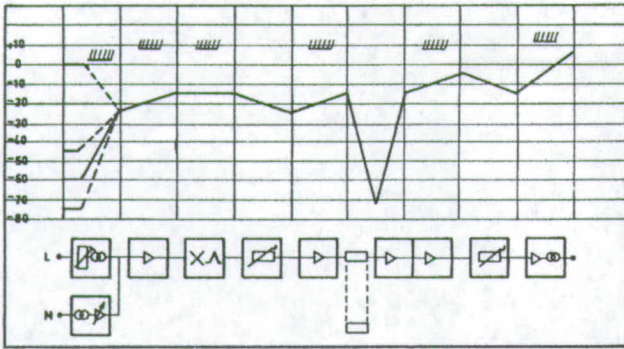
- Width: 45 inches
- Depth: 29 inches
- Height control surface: $31\frac{1}{2} \text{ inches}$
- Total height of desk: 37 inches

Weight: approx. 165 lbs.

BLOCK DIAGRAM MD MIXERS, THIRD GENERATION

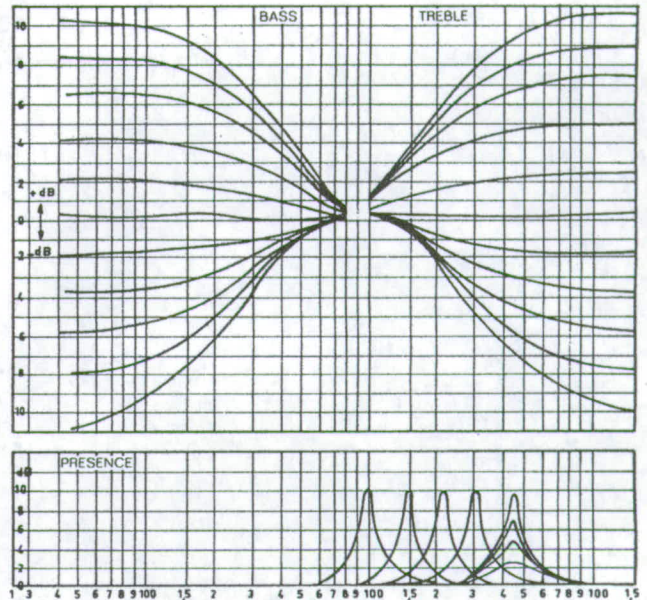


LEVEL DIAGRAM OF AN MD MIXER



The low level of the mixing bus-bar is characteristic of the current dependent mixing system. This does not increase noise because of the very low impedances. Reference to the specification for the complete desk will confirm this.

EQUALIZER CURVES OF AN MD MIXING DESK



The presence curve shows maximum values except on the final figure. This is done to improve readability.

ORDERING INFORMATION

Four standard models are available:

1. MD 8R — 8 inputs, line or microphone.
2. MD 8RF — 8 inputs, line or microphone. 4 equalizers, switchable to 8 input channels.
3. MD 12R — 12 inputs, line or microphone.
4. MD 12RF — 12 inputs, line or microphone. 4 equalizers, switchable to 8 of 12 input channels.

Above models include:

- One reverberation master channel with input and output.
- Two monitor channels with recorder-monitor and other inputs.
- One public distribution channel.
- A talk-back system to four locations.
- A cue switch output for each fader.

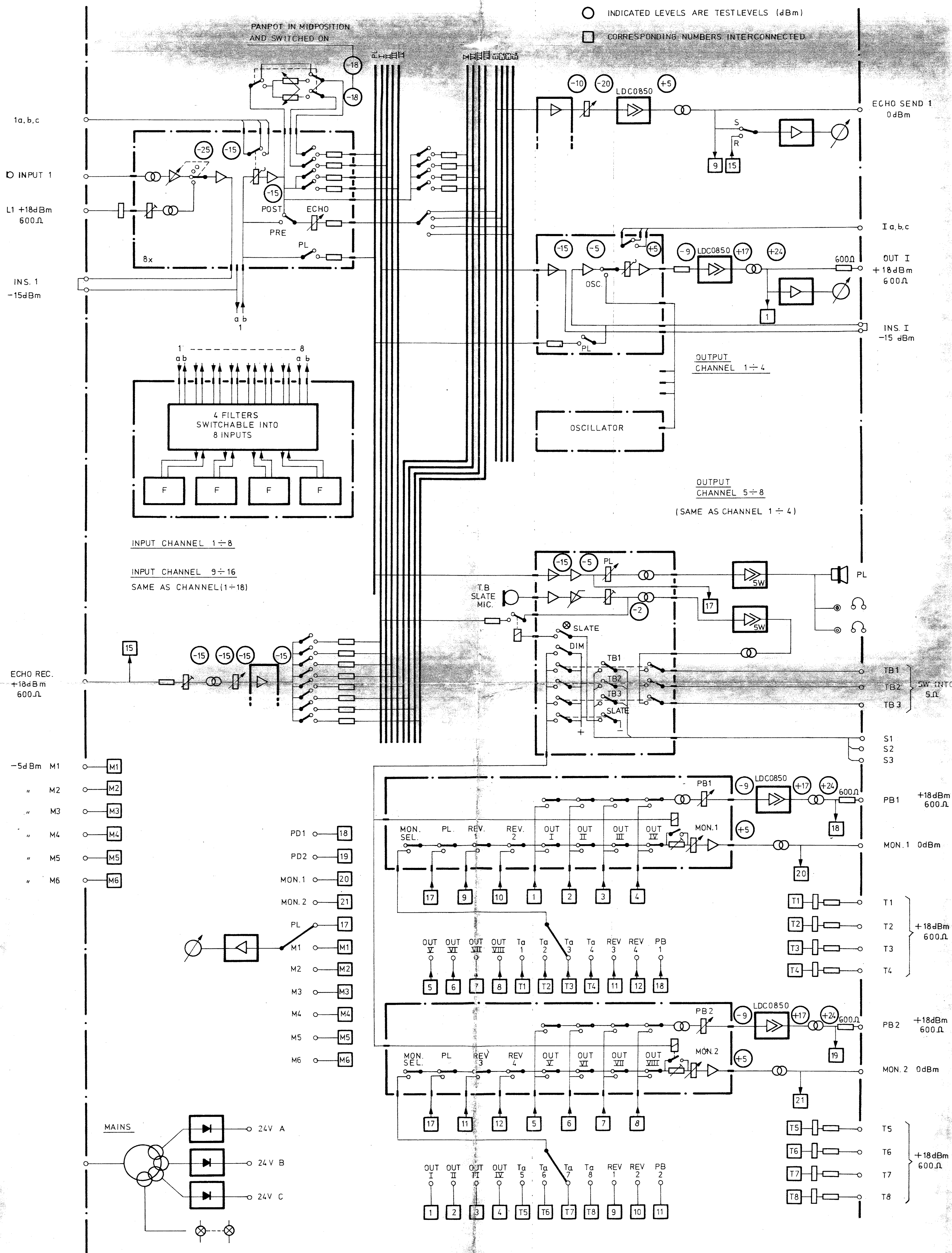
All four standard models are normally supplied with two line outputs but any number up to four can be supplied.

The number of output channels is indicated by the figure following a hyphen. Example: MD 12RF-3 refers to an MD mixer with twelve input channels (12), one reverberation channel (R), four equalizers (F), and three output channels (3).

Norelco

**PHILIPS BROADCAST
EQUIPMENT CORP.**

ONE PHILIPS PARKWAY, MONTVALE, N. J. 07645
201/391-1000



○ INDICATED LEVELS ARE TESTLEVELS (dBm)
 □ CORRESPONDING NUMBERS INTERCONNECTED

1a, b, c
 D INPUT 1
 L1 +18dBm
 600Ω
 INS. 1
 -15dBm

ECHO SEND 1
 0dBm
 I a, b, c
 OUT I
 +18dBm
 600Ω
 INS. I
 -15 dBm

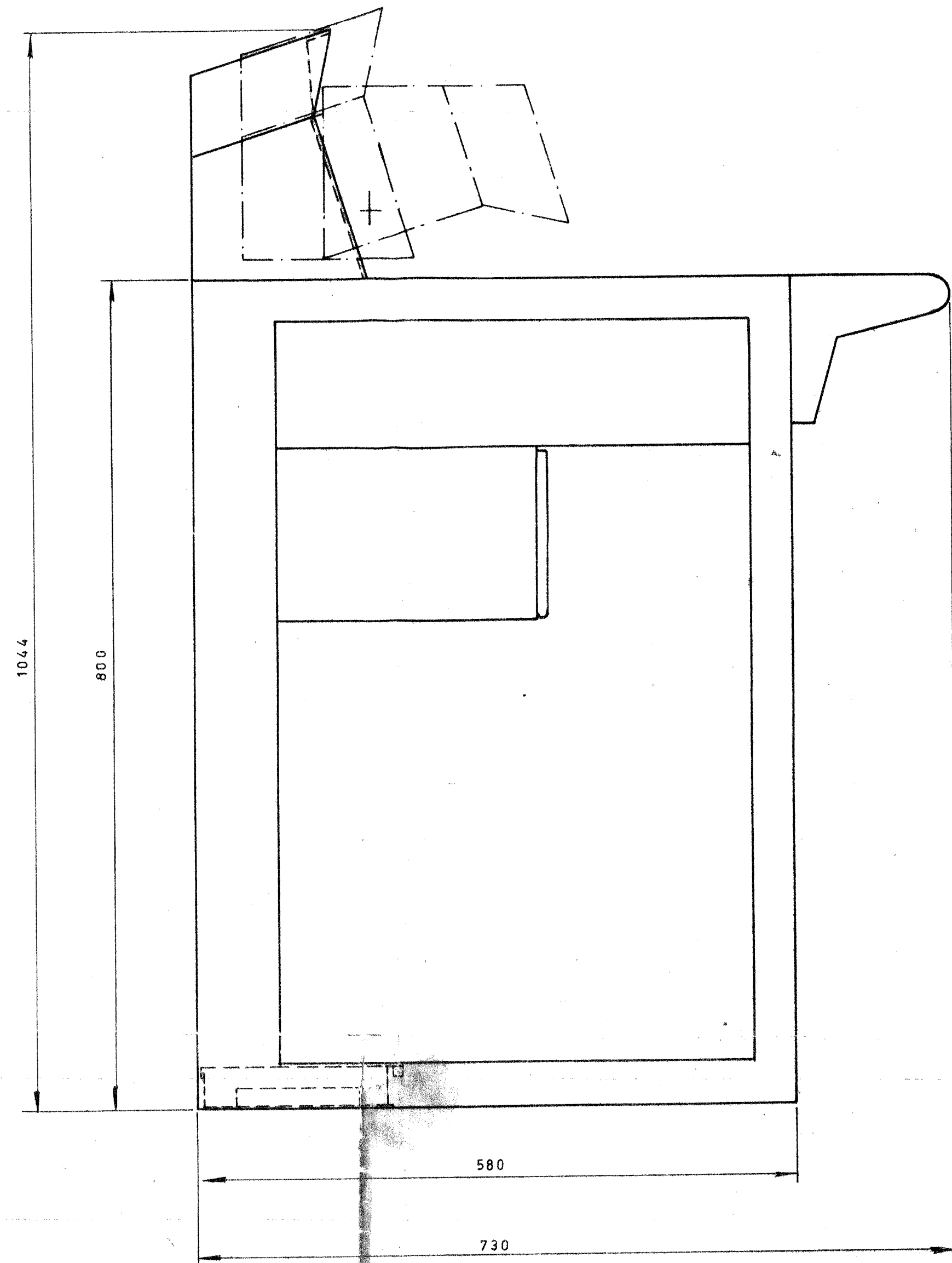
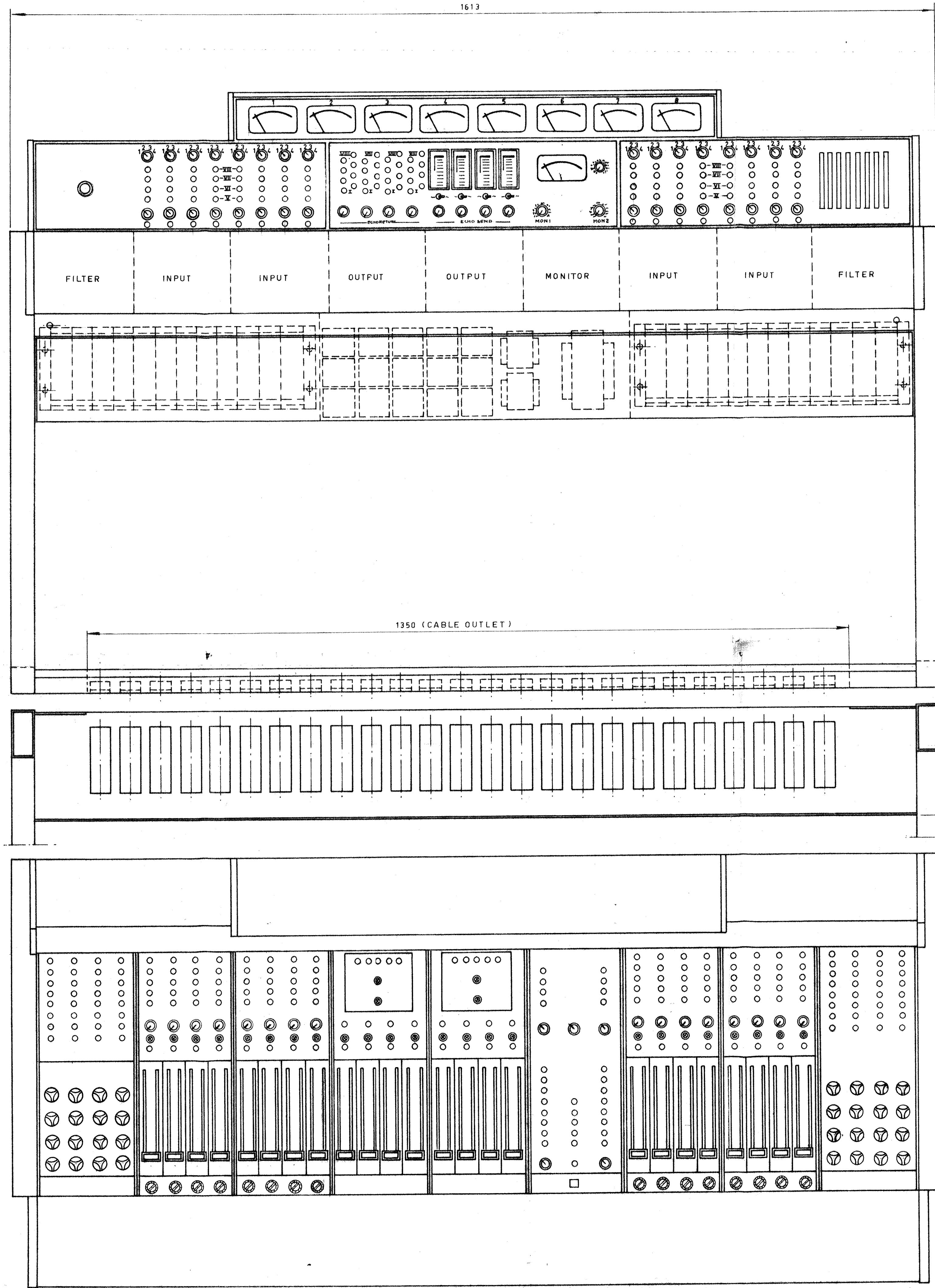
ECHO REC.
 +18dBm
 600Ω

-5dBm M1
 " M2
 " M3
 " M4
 " M5
 " M6

PD1 ○ 18
 PD2 ○ 19
 MON. 1 ○ 20
 MON. 2 ○ 21
 PL ○ 17
 M1 ○ M1
 M2 ○ M2
 M3 ○ M3
 M4 ○ M4
 M5 ○ M5
 M6 ○ M6

TB1
 TB2
 TB3
 S1
 S2
 S3
 PB1 +18dBm
 600Ω
 MON. 1 0dBm
 T1
 T2
 T3
 T4
 PB2 +18dBm
 600Ω
 MON. 2 0dBm
 T5
 T6
 T7
 T8

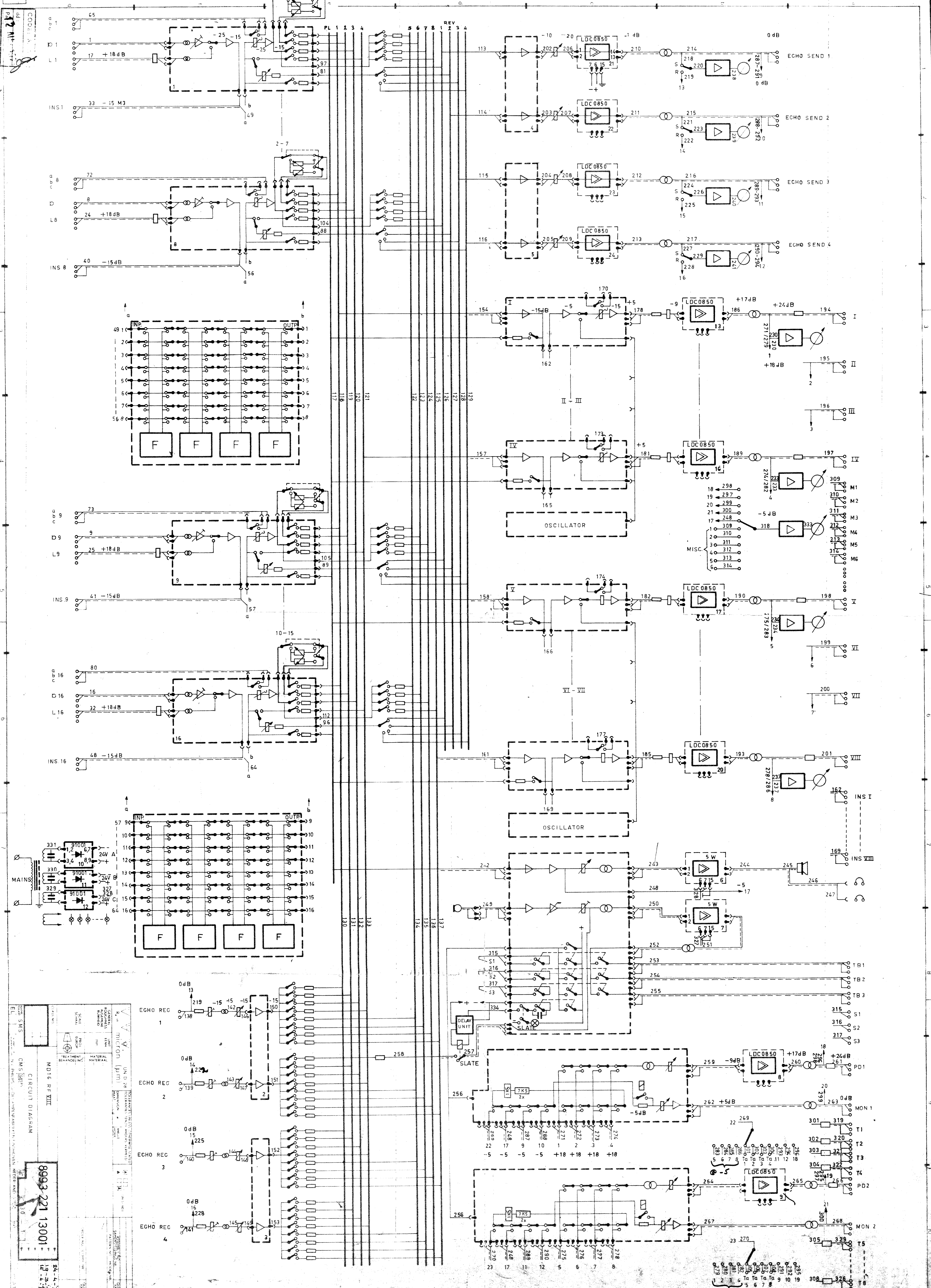
Funcional Diagram 6/21/74



UN-D 28		TOLERANCES UNLESS OTHERWISE STATED TOLERANTIES TENZI ANDERS VERMELD		UN-D 403
GENERAL DIMENSIONS ALGEMENE AFMETINGEN	UNIT mm	DIMENSION INCH	ANGLE DEGREE	PATTERN NO. MODEL NO.
SCALE 1:4	PROJ. EUREP	ORDER NO. / COMM. NO.		
CLASS NO.	AANZICHT 16 KANAALS MK 2B U.S.A.		8993 221 13001	6-7-71
N.V. PHILIPS' GLOEIAMPENFABRIEKEN, EINDHOVEN - NEDERLAND				

1. 2. 3. 4. 5. 6. 7. 8. 9. 10.
 a. b. c. d. e. f. g.

CODE
 12 AUG. 1971
 Part



<p>8993 221 13001</p> <p>13-2-77</p>	<p>MO16 REF VIII</p> <p>CMS SXS</p> <p>CIRCUIT DIAGRAM</p>	<p>UNION</p> <p>UNION</p> <p>UNION</p> <p>UNION</p>	<p>UNION</p> <p>UNION</p> <p>UNION</p> <p>UNION</p>
--------------------------------------	--	---	---

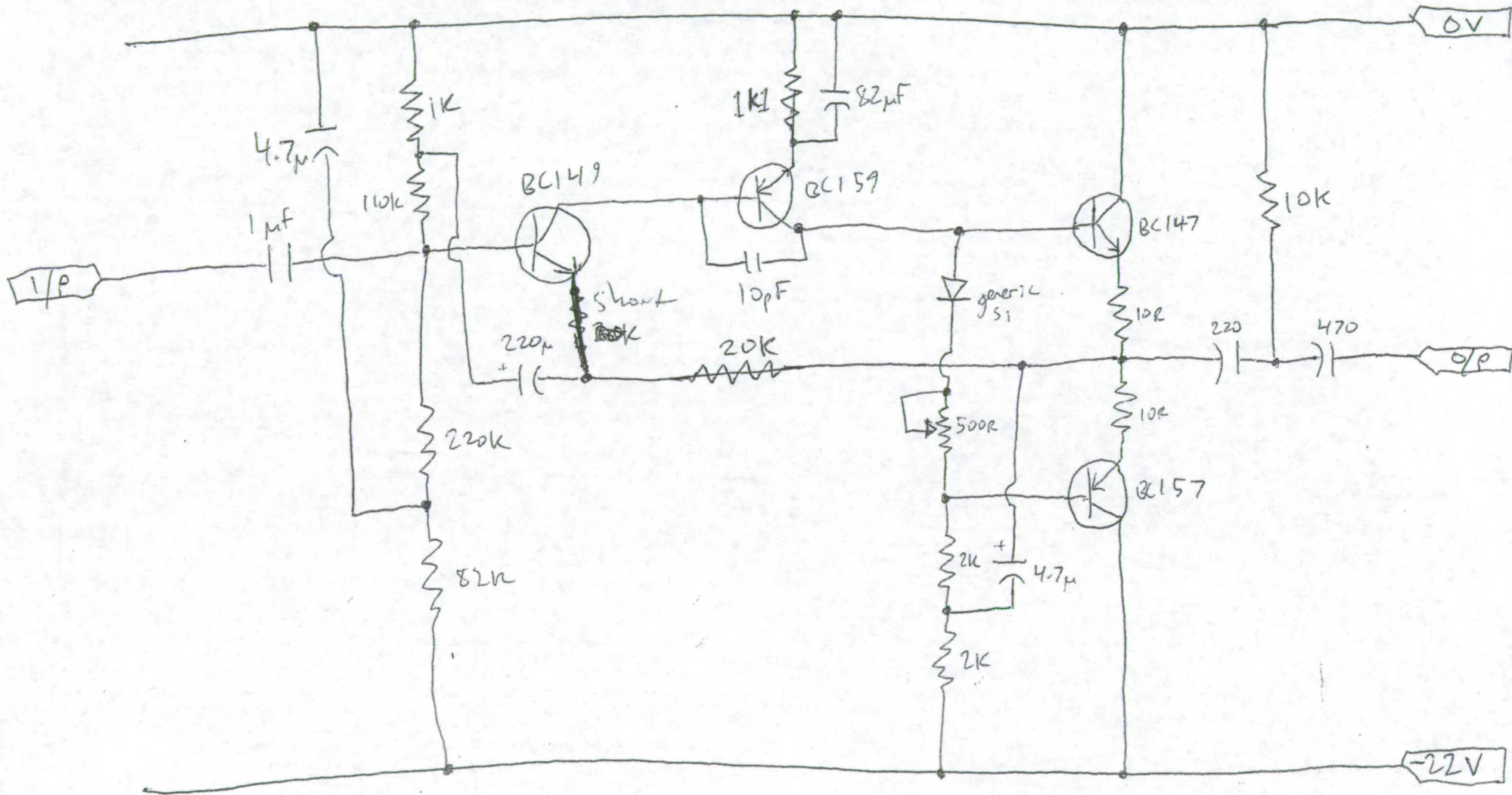
8993 221 13001
13-2-77

4RU MASTER CARD PINOUTSv3

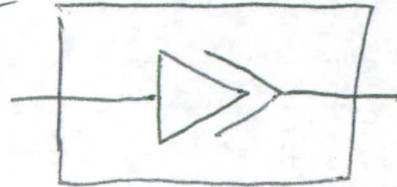
PURPLE AUDIO 4RU 10		
2 BUSS CARD		
TOP - RED		BOTTOM BLUE
✓ L Buss In +	SHIELD	L Buss In -
L Insert Send +	SHIELD	L Insert Send -
✓ L Fader Send +	SHIELD	FADER GND
✓ L Fader Return +	SHIELD	FADER GND
L Insert Return +	SHIELD	L Insert Return -
L Insert Return +	SHIELD	L Insert Return -
DRV 1 OUT +	SHIELD	DRV 1 OUT -
DRV 2 OUT +	SHIELD	DRV 2 OUT -
✓ TRAN OUT 1+	SHIELD	TRAN OUT 1-
TRAN OUT 2+	SHIELD	TRAN OUT 2-
	SHIELD	
TALK A	SHIELD	GND
TALK B	SHIELD	GND
SOLO BUSS L	SHIELD	Solo BUSS R
✓ R Buss In +	SHIELD	R Buss In -
R Insert Send +	SHIELD	R Insert Send -
✓ R Fader Send +	SHIELD	FADER GND
✓ R Fader Return +	SHIELD	FADER GND
R Insert Return +	SHIELD	R Insert Return -
R Insert Return +	SHIELD	R Insert Return -
DRV 1 OUT +	SHIELD	DRV 1 OUT -
DRV 2 OUT +	SHIELD	DRV 2 OUT -
✓ TRAN OUT 1+	SHIELD	TRAN OUT 1-
TRAN OUT 2+	SHIELD	TRAN OUT 2-
SOLO DC		
SOLO L		SOLO R
K2 L		K2 R
K2 INSERT A/B - Mute		K1 INSERT -DEFEAT
K1 L		K1 R
LOGIC 5V		
LOGIC GND		
LOGIC 12V		
AUDIO V+		
AUDIO GND		
AUDIO V-		
CHASSIS GND		

CM08

Trace 47 - - - - 0



Philips Line Amplifier LDC0850



8222 300 87681

on-board

Zener reg

gets -24V

7/27/06

THIS ONE IS CORRECT!