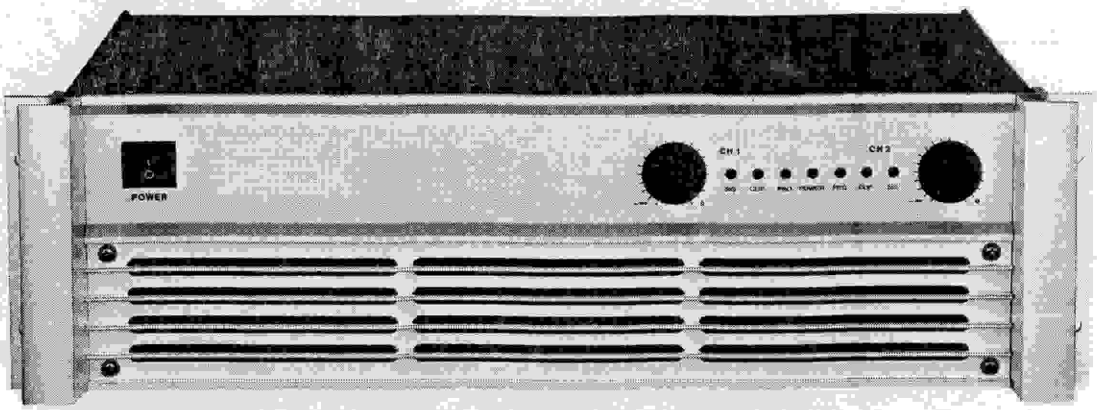
PROFESSIONAL POWER AMPLIFIER



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

TO PREVENT ELECTRIC SHOCK DO NOT REMOVE TOP OR BOTTOM COVERS . NO USER SERVICEABLE PARTS INSIDE.REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. DISCONNECT POWER CORD BEFORE REMOVING REAR INPUT MODULE TO ACCESS GAIN SWITCH.

AVIS

RESQUE DE CHOC ELECTRIQUE
N'OUVREZ PAS

À PRÉVENIR LE CHOC ÉLECTRIQUE N'ENLEVEZ PAS LES COUVERTURES. RIEN DES PARTIES UTILES À ENTÉRIEUR. DÉBRANCHER LA BORNE AVANTD'OUVRIR LA MODULE EN ARRIÈRE.

WARNING

TO REDUCE THE RISK OF ELECTRIC SHOCK,DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE!

Magenetic Field

CAUTION! Do not locate sensitive high-gain equipment such as preamplifiers or tape decks directly above or below the unit. Because this amplifier has a high power density.it has a strong magnetic field which can induce hum into unshiei ded devices that are located neardy. The fiei dos strongest just above and below the unit.

If an equipment rack is used,we recommend locating the amplifier (s) in the bottom of the rack and the preamplifier or sensitive equipment at the top.

WATCH FOR THESE SYMBOLS:

The lightning bolt triangle is used to alert the user to the risk of electric shock.

The exclamation point triangle is used to alert the user to important operating or maintenance instructions.

WELCOME

congratulations on your purchase of the renowned Exseries professional amplifier.Exseries amplifier are designed to provide enormous levels of pure, undistorted power rugged low-profile packaged making them the choice for prosound reinforcement. they utilize protection circuitry to keep the show going long after other amplifier have shut down, with their expandability,amplifier can be easeily customized with one of our many optional input modeles.

SOLVING INPUT PROBLEMS

Sometimes large subsonic (subaudible) frequencies are present in the input signal. These can damage loudspeakers by overloading or overheating. To attenuate such frequencies, place a capacitor in series with the input signal line. The graph in Figure 3.10 shows some capacitor values and how they affect the frequency response. Use only low-leakage paper, mylar or tantalum capacitors.

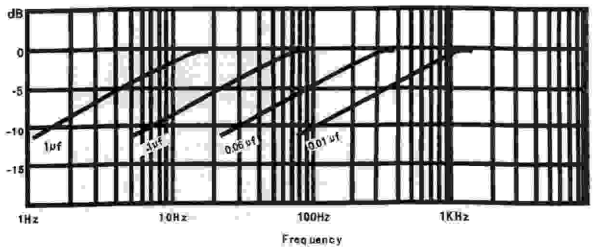


Fig.3.10 Subsonic Filter Capacitors

Another problem to avoid is the presence of large levels of radio frequencies or RF in the input signal. Although high RF levels may not pose a threat to the amplifier, they can burn out tweeters or other loads that are sensitive to high frequencies. Extremely high RF levels can also cause your amplifier to prematurely activate its protection circuitry, resulting in inefficient operation. RF can be introduced into the signal by local radio stations and from the bias signal of many tape recorders. To prevent high levels of input RF, install an appropriate low-pass filter in series with the input signal. Some examples of unbalanced wiring for low-pass filters are shown in Figure 3.11.

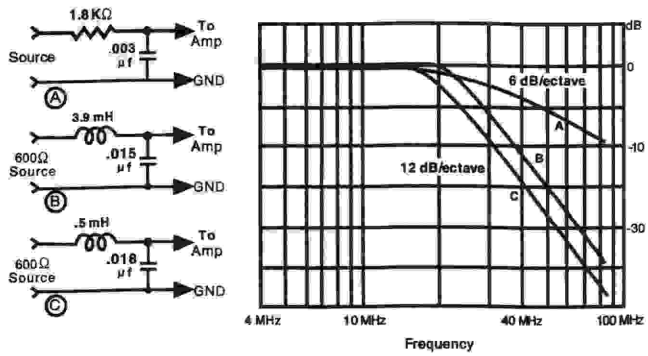


Fig. 3.11 Unbalanced RFI Filters

For balanced input wiring use one of the examples in Figure 3.12. Filters A, B and C correspond to the unbalanced filters above. Filter D also incorporates the
subsonic filter described previously.

Tip: *The P.1.P-FX included with your amplifier has plenty of room on its circuit board for input fiters.*

A third problem to avoid is ground loops. These are undesired currents that flow in a grounded system and usually cause hum in the output. A common source of ground problems is the placement of input cables parallel to power cables or near power transformers. A ground loop can occur when the magnetic field generated by the 60 Hz alternating current in the power cable or transformer is induced into the input cables. To prevent this you can lace the input cables along.

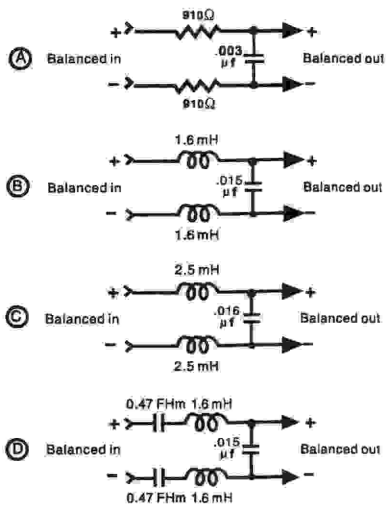


Fig. 3 12 Balanced RFI Filters

Input Wiring Tips

1. Use only shielded cable. Cables with higher density shields are better. Spiral wrapped shield is not recommended.

2. When using unbalanced lines, keep the cables as short as possible. Avoid cable lengths greater than 10 feet (3 meters)

3. Do not run signal cables together with high-level wiring such as loudspeaker wires or AC cords. This greatly lessens the chance of hum or noise being induced into the input cables.

4. Turn the entire system off before changing connections. Turn level controls sown completely before powering the system back up. Crown is not liable for damage incurred when any transducer or component is overdriven.

3.3.4 Input Connection

Both the balanced XLR and phone jack inputs have a nominal impedance of 20 K ohms (10 K ohms with unbalanced wiring) and will accept the line-level output of most devices .Female XLR input connectors are provided on the standard P.I.P.-FX input module (other *P.I.P.* moduses are described in Section 8.1) .Correct input wiring will depend on two factors: (1) whether the input signals are balanced or unbalanced,and (2) whether the signal source floats or has a ground reference.Figures 3.7 and 3.8 show the recommended connection techniques for each type of signal source.

The amplifier`s built-in 1/4-inch phone jack input connectors can be wired similarly for balanced or unbalanced,floating or ground-referenced sources.They have a standard tip-ring -sleeve (TRS) configuration: the tip is positive (+) ,the ring is negative (-) and the sleeve is ground (see Figure 3.9) .. Wiring for various sources follows the XLR wiring guidelines shown in Figures 3.7 and 3.8.

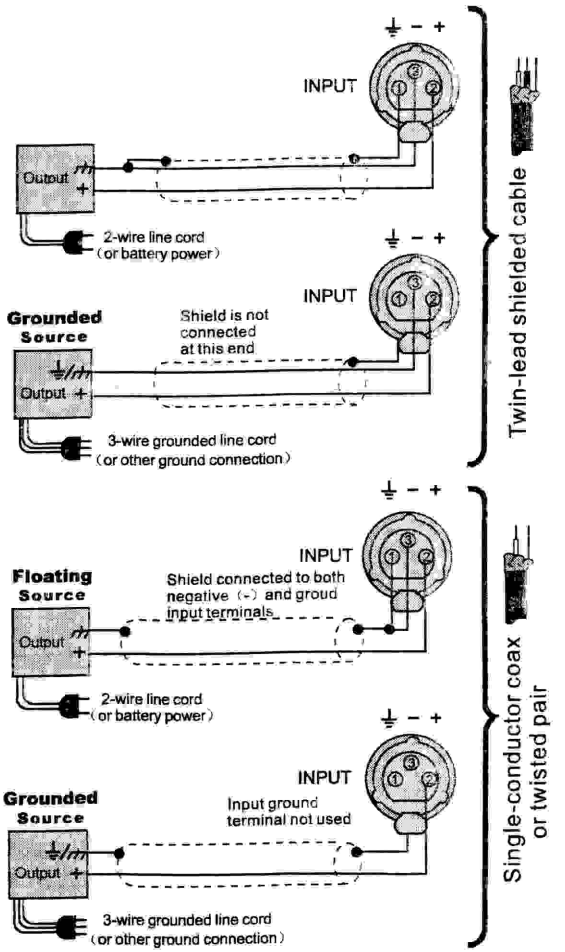


Fig.3.7 Unbalaced Input Wiring

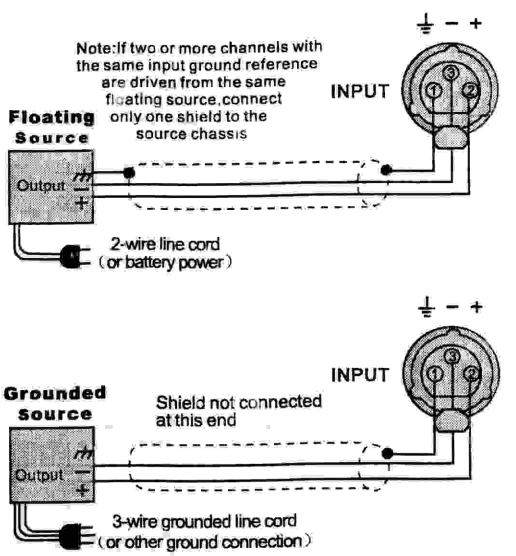


Fig.3.8 Balanced Input Wiring

The phone jacks should not be used as inputs when a *P.I.P.* module with active circuitry is installed. The phone jacks are in parallel with the output of the *P.I.P.* module, so an input signal connected to the phone jacks can feed backwards into the active circuitry of the *P.I.P.* and cause undesirable distortion. You can use the phone jacks for signal input with any of the following *P.I.P.* modules installed: P.I.P.-FX, P.I.P.-BB, P.I.P.-FMX, P.I.P.-FXQ and P.I.P.-FPX. All other *P.I.P.* modules have active circuitry and should not be installed if you plan to connect input signals to the phone jacks. The phone jacks can always be used as "daisy chain" outputs to feed post-processed signals from the *P.I.P.* to the inputs of other amplifiers.

Please follow the instruction in Section 3.3.2 and 3.3.3 if the amplifier will be used in either Bridge-Mono or Parallel- Mono mode. Remember, do not use the channel 2 input in either mono mode.

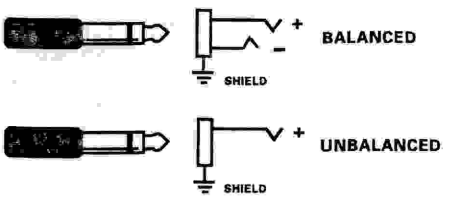


Fig. 3.9 Balanced and Unbalanced Phone Plugs

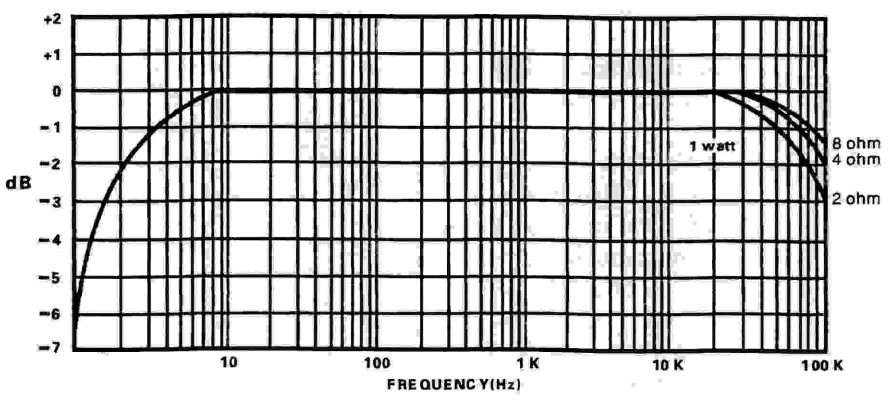


Fig. 6.7 Typical Frequency Response

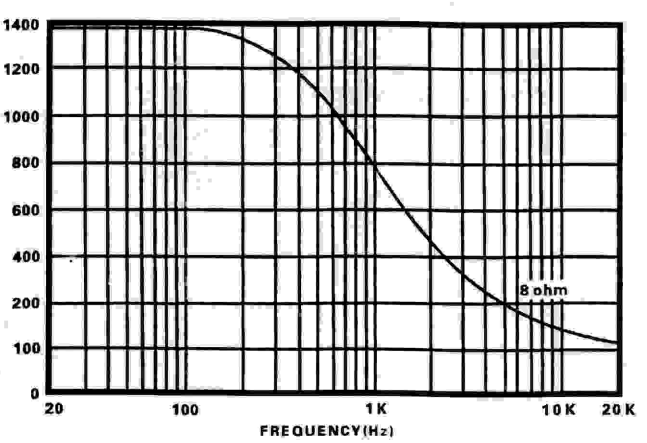


Fig. 6.8 Typical Damping Factor

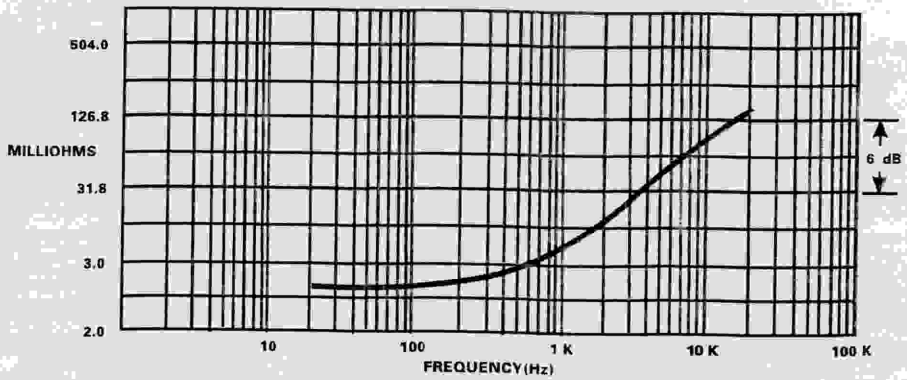


Fig. 6.9 Typical Output Impedance

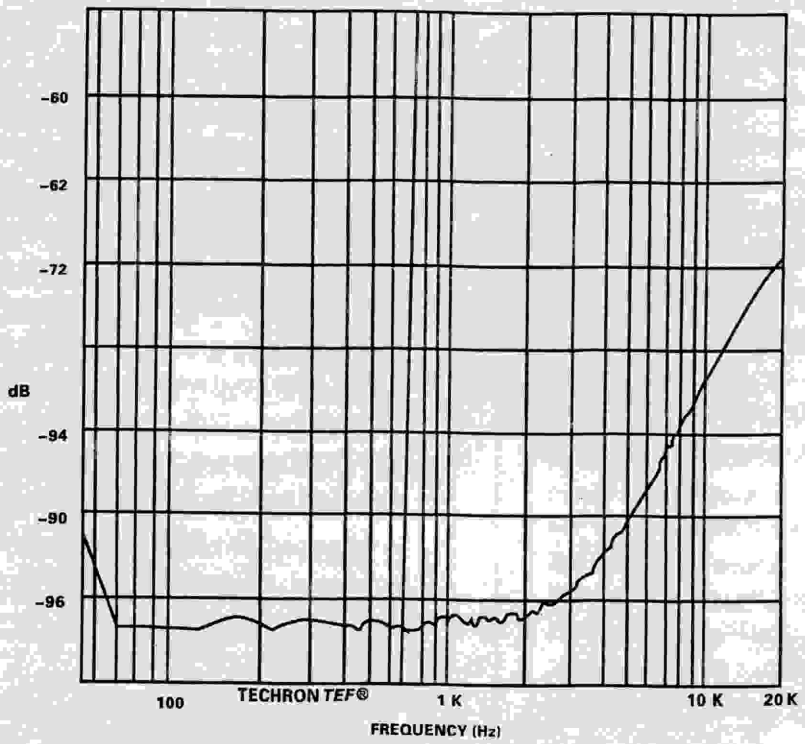
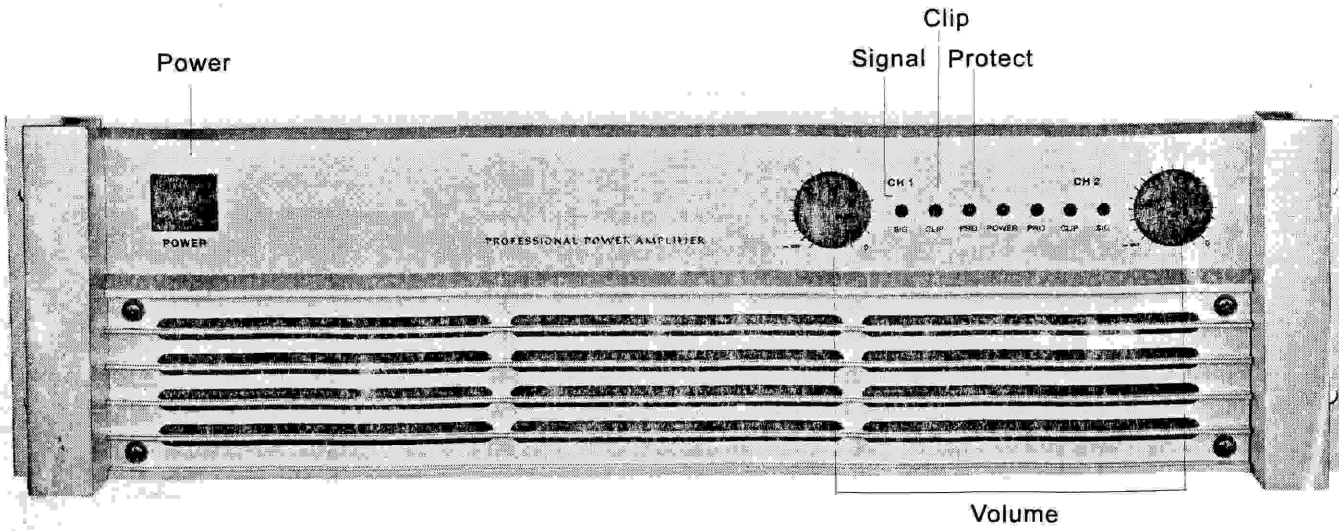


Fig. 6. 12 Typical Crosstalk for the Macro-Tech



Operating Precautions

Although our amplifier is protected from internal And external taults,you should still take the following precautions for optimum performance and safety:

1.WARNING: Vifferent stereo/mono mode have unique wiring requirements. Do not change the position of the stereo/mono switch unless the amplifier is first turned off and all associated wirinng is properly installed for the selected stereo/mono mode.

2.Turn off the amplifier and unplug it from the AC mains before removing and cleaning the dust filters.

3.Operate the amplifier from AC mains • of not more than 10% above or below the selected line voltage and only at the specified line frequency.

4.Tampering wyth the circuitry by unqualified personnel or making unauthorized circuit changes may be hazardous and typically results in damage to the amplifier.

Remember:It is not liable for damage that results from overdriving other system components.

2 Indicators

The amber enable indicator is provided to show that the amplifier has been turned on (or enabled) and its lowvoltate power supply and forced-air cooling system are working. It does not indicate the status of the high-voltage power supplies.For example, the enable indicator will remain lit during unsual conditions that would cause the amplifier Ts protection systems to temporarily remove power from a high-voltage power supply (see Section 4) .The signal IOC indicators flash green in sync with the audio output signal,and flash yellow if the input waveform differs from the output by more than 0.05% introduced by the amplifier including harmonic distortion, intermodulation distortion and clipping distortion.

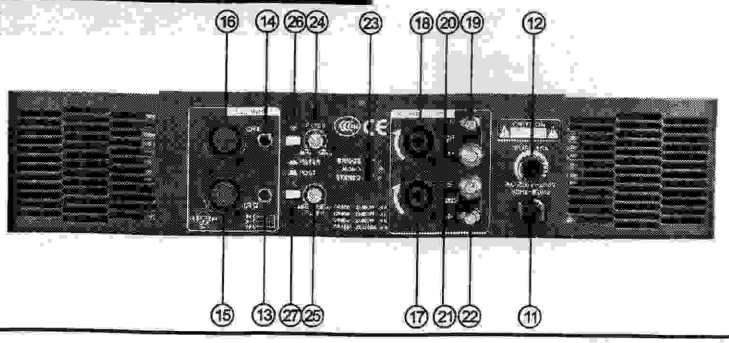
3 Controls

The power switch ix located on the front panel so you can easily turn the amplifier on and off. Note:The power cord should also be disconnected when making wiring or other installation changes. Please follow these steps when first turning on your amplifier:

1.Turn down the level of your audio source. For example.set your mixer`s volume to-ofi (off) .

2.Turn down the amplifier`s front panel level controls.

BACK



11. AC power cord
12. Fuse (see fuse socket)
13. Channel 1 combo inputs (see connections)
14. Channel 2 combo inputs (see connections)
15. Channel 1 cannon input (see connections)
16. Channel 2 cannon input (see connections)
17. Channel 1 speak on output (see connections)
18. Channel 2 speak on output (see connections)
19. Channel 1 Negative post (see connections)
20. Channel 1 Positive Post (see connections)
21. Channel 2 Positive Post (see connections)
22. Channel 2 negative Post (see connections)
23. Operation Switch (see operation option)
24. Channel 1 Fliter Switch
25. Channel 2 Fliter Switch
26. Channel 1 bass Switch
27. Channel 2 bass Switch

3.Turn on the power switch.The enable indicator beside the switch should glow.
4.After the four second turn-on delay, turn up the level of your audio source to the maximum desired level.
5.Turn up the front panel level controls untill the maximum desired loudness or power level is achieved.
6.Turn down the sevel of your audio source to its normal range.
You can cdjust each channel`s output using the front panel level controls.These controls are located on the front panel for easy access.
Caution:When operating in Bridge-Mono moed, the channel 2 level control should be turned down completely and should not be used.
The back panel stero/mono switch is used to select stereo.Bridge-Mono or Parallel-Mono mode. Before selecting a different stereo/mono mode, power must be removed from the amplifier.
Lmportant:Do not change this switch unless you thoroughly understand the wiring requirements for each operating mode （refer to the amplifier`s Reference Manual for wiring instructions）.
The back panel ground lift switch is used to isolate the input signal grounds and the Ac（chassis）ground.

It only affects the phone jack inputs and does not affect accessory input connectors.Sliding the switch to the left isolates or "litts" the sleeve of each phone jack and the AC ground.

The circuit breaker reset switch for the high voltage power supplies is built into the power switch. Refer to Section 4.5 in the unusual event of a tripped breaker.

4 Protection Systems

The amplifiers have extensive protection systems, including ODEP,ultrasonic/RF protection,drive protection,transformer thermal protection and a power supply circuit breaker.

4.1ODEP

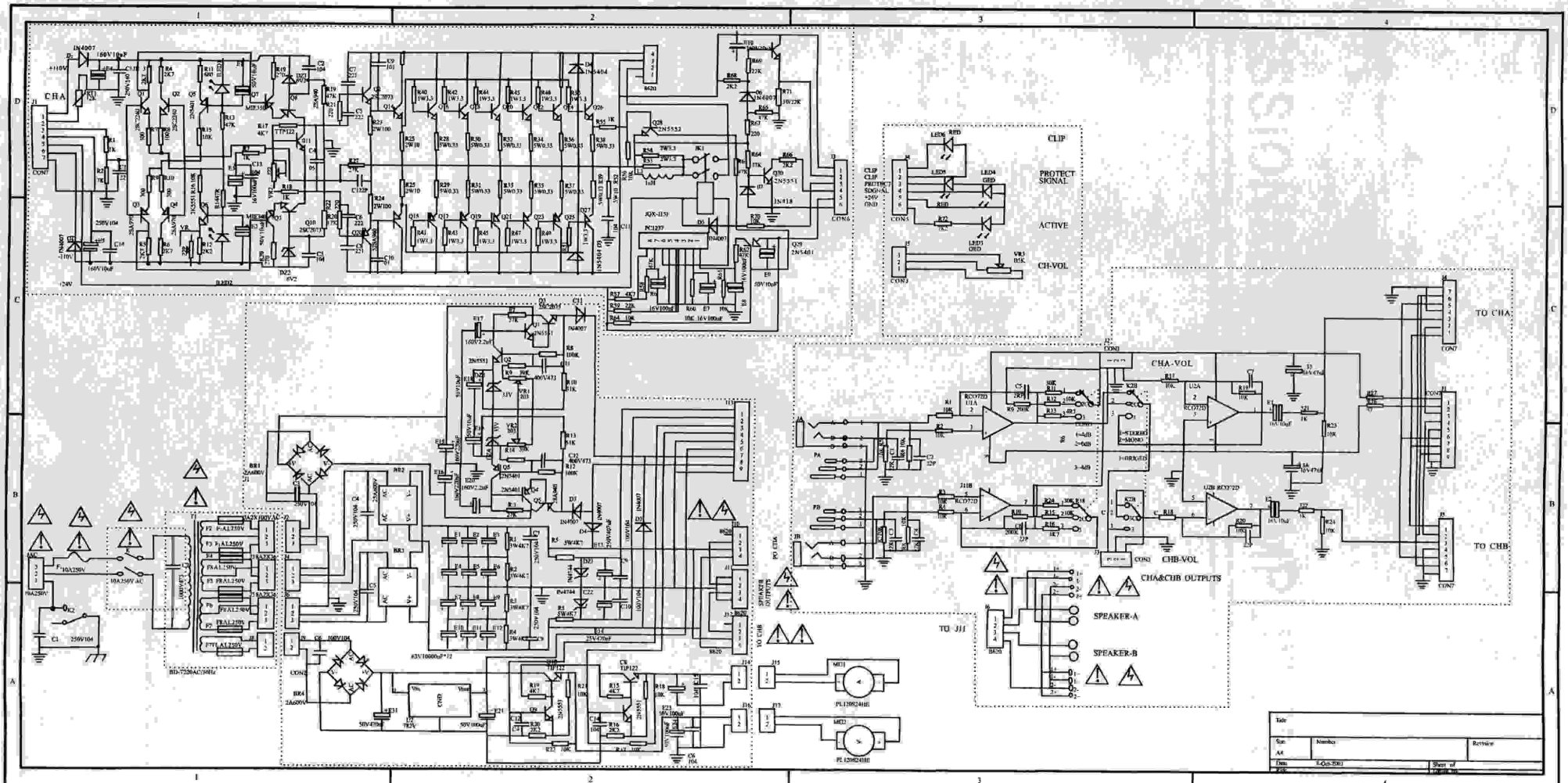
It invented ODEP to solve two long-standing problems in amplifier design:to prevent amplifier shutdown during demanding operation,and to increase the effciency of the output circuitry.

To do this,established a rigorous program to device before installing it in an amplifier.Next, 12 desinged intellingent circuyitry to simulate the instantaneous operating conditions of the output.

Ks850 - audio iamplifier

Model	MA-1000	MA-2000	MA-3000	MA-4000	MA-2.0	MA-2.2	MA-2.4	MA-2.6
Rated power Output(4Ω)	2X600W	2X1100W	2X1600W	2X2200W	2X600W	2X900W	2X1300W	2X1600W
Rated power Output(8Ω)	1200W	2200W	3200W	4400W	1200W	1800W	2600W	3200W
Separation	＞70dB							
S/N Ratio	＞100dB							
Wave distortion	＜0.06%(1KHz)							
Sensitivity(Input)	-4dB,0dB,+4dB							
Danping factor	300:1,10-400Hz@ 8Ω							
Slew Rate	100V/μs							
Input Impedance	20KΩ（balanced input）							
Input terminal	1/4 TRS phone connector XLR connector							
Output Impedance	4Ω～8Ω							
Frequency Response	20Hz～20KHz,±0.5Bd at rated output							
Power Supply(factory config)	220V～50Hz±10%							
Dimensions	90(H)×430(W)×430(D)mm							

CIRCUITRY


CHA
CLIP
PROTECT SIGNAL
ACTIVE
CH-VOL
CHA-VOL
CHB-VOL
CHA&CHB OUTPUTS
SPEAKER-A
SPEAKER-B
TO CHA
TO CHB
TO J11
TO CHB
SPEAKER OUTPUTS