

User's Guide
for the
CRATE
KX-220



Stereo Keyboard Amplifier

Please read this user's
guide before using your
new amplifier!



CRATE KX-220 Stereo Keyboard Amplifier

Congratulations!







You are now the proud owner of one of the most versatile keyboard amplifiers available, the Crate KX-220 Four Channel Stereo Keyboard Amplifier. This incredible unit features Crate's legendary performance and high quality construction in a rugged and easy to operate package.

Your KX-220 is proudly made in America, using only the best components. Extensive testing and Crate's Five-Year Warranty assure you that your new amplifier is the absolute best it can be. In order to get the most out of it, we strongly urge you to read this manual before using the amplifier.

And **thank you** for choosing 

Table of Contents:

| | |
|------------------------------------|------------|
| Features | 3 |
| The Top Panel | 4 |
| The Back Panel | 5 |
| Sample Hookup Diagram | 6 |
| System Block Diagram | 7 |
| Technical Specifications | back cover |

|  <p>CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN</p> <p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p> |  <p>PRECAUCION RIESGO DE CORRIENTAZO NO ABRA</p> <p>PRECAUCION PARA DISMINUIR EL RIESGO DE CORRIENTAZO NO ABRA LA CUBIERTA. NO HAY PIEZAS ADENTRO QUE EL USUARIO PUEDO REPARAR. DEJE TODO MANTENIMIENTO A LOS TECNICOS CALIFICADOS</p> |  <p>ATTENTION RISQUE D'ELECTROCUTION NE PAS OUVRIR</p> <p>ATTENTION: POUR REDUIRE D'ELECTROCUTION NE PAS ENLEVER LE COUVERCLE. AUCUNE PIECE INTERNE N'EST REPARABLE PAR L'UTILISATEUR. POUR TOUTE REPARATION, S'ADRESSER A UN TECHNICIEN QUALIFIE.</p> |  <p>VORSICHT ELEKTRISCHE SCHLAGEGFAHR NICHT OFFENEN</p> <p>VORSICHT: ZUR MINIMIERUNG ELEKTRISCHER SCHLAGEGFAHR NICHT DEN DECKEL ABENHMEN. INTERNE TEILE KONNEN NICHT VOM BENUTZER GEWARTET WERDEN. DIE WARTUNG S QUALIFIZIERTEM WARTUNGSPERSONAL ZU UBERLASSEN.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---|---|--------------------------------|---------------------------|--------------------------------|---------------------------|--------------------------------|---------------------------|----|---|----|---|-----|---|----|---|-----|---|-----|-----|----|---|-----|---------|-----|-------------|
| <p>THIS EQUIPMENT HAS BEEN DESIGNED AND ENGINEERED TO PROVIDE SAFE AND RELIABLE OPERATION. IN ORDER TO PROLONG THE LIFE OF THE UNIT AND PREVENT ACCIDENTAL DAMAGES OR INJURY, PLEASE FOLLOW THESE PRECAUTIONARY GUIDELINES:</p> | <p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT OPEN CHASSIS; DO NOT DEFEAT OR REMOVE THE GROUND PIN OF THE POWER CORD; CONNECT ONLY TO A PROPERLY GROUNDED AC POWER OUTLET.</p> | <p>WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.</p> <p>CAUTION: NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p> | <p>CAUTION: OUR AMPLIFIERS ARE CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS. CONTINUED EXPOSURE TO HIGH SOUND PRESSURE LEVELS CAN CAUSE PERMANENT HEARING IMPAIRMENT OR LOSS. USER CAUTION IS ADVISED AND EAR PROTECTION IS RECOMMENDED IF UNIT IS OPERATED AT HIGH VOLUME.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>ESTE APARATO HA SIDO DISEÑADO Y CONSTRUÍDO PARA PROVEER AÑOS DE OPERACION SEGURA Y CONFIABLE. PARA PROLONGAR LA VIDA DE ESTA UNIDAD E IMPEDIR DAÑOS ACCIDENTALES POR FAVOR SIGA ESTAS INSTRUCCIONES PREVENTIVAS:</p> | <p>PRECAUCION: PARA DISMINUIR EL RIESGO DE DESCARGAS ELÉCTRICAS: (1) NO ABRA LA CUBIERTA, (2) NO ES RECOMENDABLE REMOVER O DESACTIVAR LA PATA DEL POLO A TIERRA DEL CABLE DE CORRIENTE. CONECTE CORRECTAMENTE A UNA TOMA DE CORRIENTE A TIERRA.</p> | <p>ADVERTENCIA: PARA EVITAR DESCARGAS ELÉCTRICAS O PELIGRO DE INCENDIO, NO DEJE ESTE APARATO EXPUESTO A LA LLUVIA O HUMEDAD.</p> <p>PRECAUCION: NO HAY PIEZAS ADENTRO QUE EL USUARIO PUEDE REPARAR. DEJE TODO MANTENIMIENTO A LOS TÉCNICOS CALIFICADOS.</p> | <p>PRECAUCION: NUESTROS AMPLIFICADORES PUEDEN PRODUCIR NIVELES DE PRESION DE SONIDO ALTO. EXPOSICION CONTINUADA A LOS NIVELES DE PRESION DE SONIDO ALTO PUEDE CAUSA DANO PERMANENTE A SU OIDO. ES ACONSEJADO QUE USE PRECAUCION AL USUARIO Y ES RECOMENDADO PROTECCION PARA LOS OIDOS SI LA UNIDAD ES OPERADA A VOLUMEN ALTO.</p> | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>THE CHART BELOW SHOWS THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS WHICH WERE IN EFFECT AT THE TIME OF THIS PUBLICATION FOR PERMISSIBLE NOISE EXPOSURE, PER 29CFR1910.95, TABLE G-16:</p> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>SOUND LEVEL DBA, SLOW RESPONSE</th> <th>DURATION PER DAY IN HOURS</th> <th>SOUND LEVEL DBA, SLOW RESPONSE</th> <th>DURATION PER DAY IN HOURS</th> <th>SOUND LEVEL DBA, SLOW RESPONSE</th> <th>DURATION PER DAY IN HOURS</th> </tr> </thead> <tbody> <tr> <td>90</td> <td>8</td> <td>97</td> <td>3</td> <td>105</td> <td>1</td> </tr> <tr> <td>92</td> <td>6</td> <td>100</td> <td>2</td> <td>110</td> <td>1/2</td> </tr> <tr> <td>95</td> <td>4</td> <td>102</td> <td>1 - 1/2</td> <td>115</td> <td>1/4 or less</td> </tr> </tbody> </table> <p>ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS TO THESE AMOUNTS LISTED ABOVE COULD RESULT IN SOME HEARING LOSS.</p> | | | | SOUND LEVEL DBA, SLOW RESPONSE | DURATION PER DAY IN HOURS | SOUND LEVEL DBA, SLOW RESPONSE | DURATION PER DAY IN HOURS | SOUND LEVEL DBA, SLOW RESPONSE | DURATION PER DAY IN HOURS | 90 | 8 | 97 | 3 | 105 | 1 | 92 | 6 | 100 | 2 | 110 | 1/2 | 95 | 4 | 102 | 1 - 1/2 | 115 | 1/4 or less |
| SOUND LEVEL DBA, SLOW RESPONSE | DURATION PER DAY IN HOURS | SOUND LEVEL DBA, SLOW RESPONSE | DURATION PER DAY IN HOURS | SOUND LEVEL DBA, SLOW RESPONSE | DURATION PER DAY IN HOURS | | | | | | | | | | | | | | | | | | | | | | |
| 90 | 8 | 97 | 3 | 105 | 1 | | | | | | | | | | | | | | | | | | | | | | |
| 92 | 6 | 100 | 2 | 110 | 1/2 | | | | | | | | | | | | | | | | | | | | | | |
| 95 | 4 | 102 | 1 - 1/2 | 115 | 1/4 or less | | | | | | | | | | | | | | | | | | | | | | |
| <p>EXPLANATION OF GRAPHICAL SYMBOLS: EXPLICACION DE SIMBOLOS GRAFICOS:</p> | | <p> = "DANGEROUS VOLTAGE" "VOLTAGE PELIGROSO" "DANGER HAUTE TENSION" "GEFAHRICHE SPANNUNG"</p> <p> = "IT IS NECESSARY FOR THE USER TO REFER TO THE INSTRUCTION MANUAL" "ES NECESARIO QUE EL USUARIO SE REFIERA AL MANUAL DE INSTRUCCIONES." "REFERREZ-VOUS AU MANUAL D'UTILISATION" "UNBEDINGT IN DER BEDIENUNGSANLEITUNG NACHSCHLAGEN"</p> | | | | | | | | | | | | | | | | | | | | | | | | | |

CRATE KX-220 Stereo Keyboard Amplifier

Features:

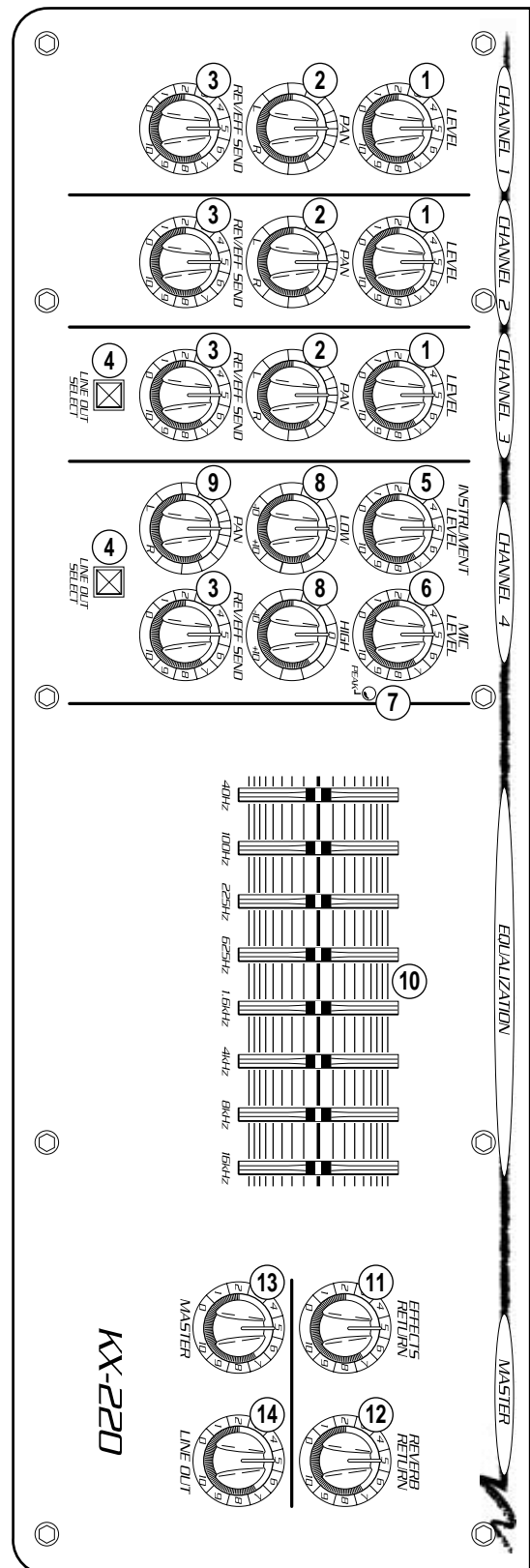
Below are some of the outstanding features which set the KX-220 in a class by itself. Additional information on these features can be found throughout the remainder of this manual.

- Complete stereo circuitry all the way to the internal power amplifier
- Four separate input channels, each with its own level, pan and reverb/effect send controls
- Three stereo line level channels, each with 1/4" left and right/mono input jacks
- One "dual mono" channel, with a 1/4" instrument and an XLR microphone input jack, plus a two band EQ
- Line out select switches (channels 3 and 4) – keeps those channels out of the external mix if desired
- Eight band stereo graphic EQ for total tone control
- Master level, effects return, reverb return, and line out level controls
- Internal spring reverb
- Stereo effects loop for external effects
- Stereo line out jacks for connecting to a mixing board, recording unit, or PA system
- Stereo preamp out jacks for connecting to additional amplifiers
- Power amp in jack (use two KX-220's for total stereo performance)
- Built in power amp limiter for clean sound at full output
- Rugged construction and easily accessed controls
- Removable casters for greater mobility
- Crate's exclusive Five Year Warranty (where applicable)

CRATE KX-220 Stereo Keyboard Amplifier

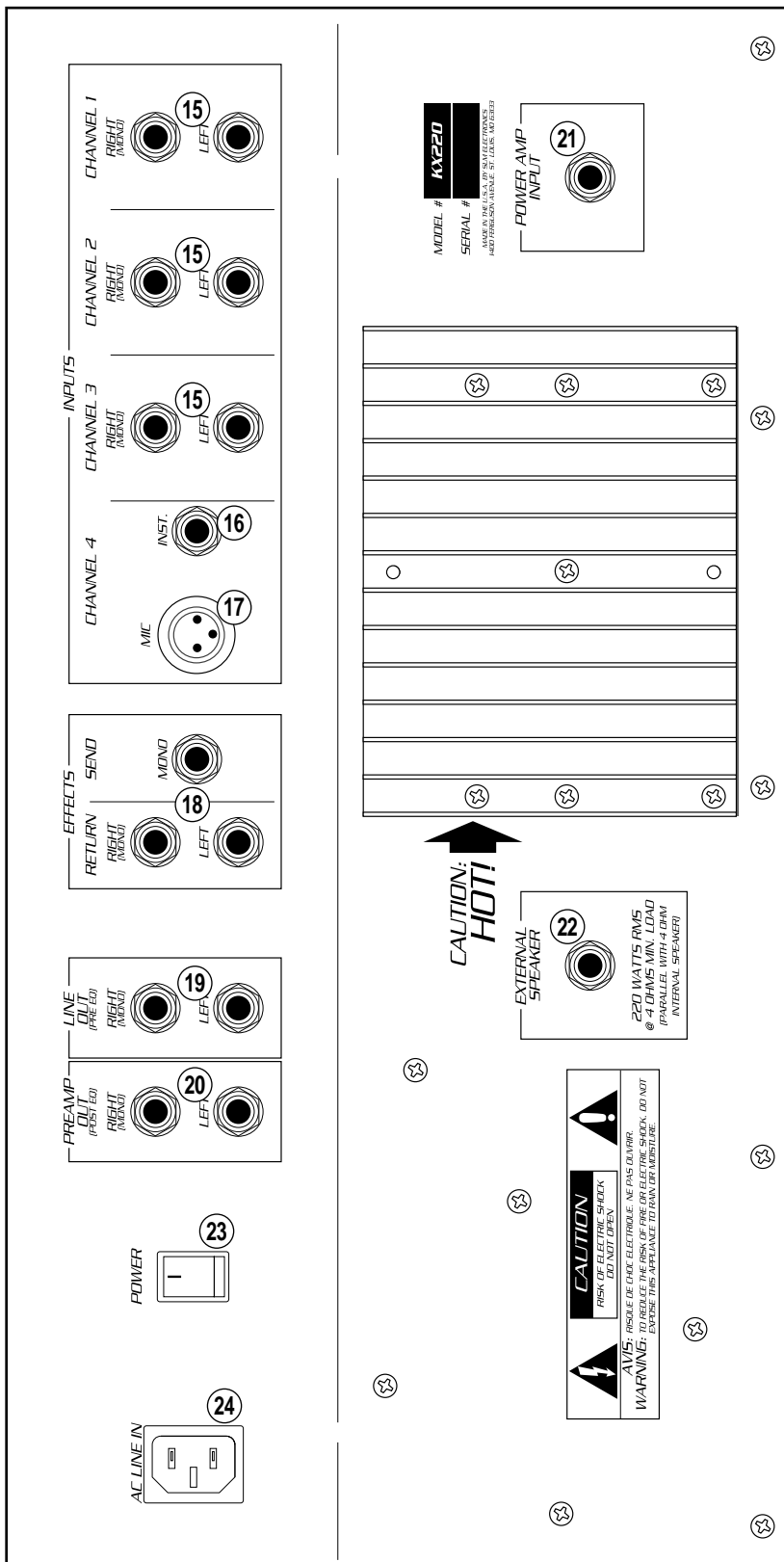
The Top Panel:

- 1: **Level Control (channel 1–3):** Adjust the input level of the signal(s) with this control. Each channel's level control governs the right/mono and left input jacks simultaneously.
- 2: **Pan Control, (channel 1–3):** This control proportions the signal between the left and right outputs. In stereo applications it acts as a left/right balance control.
- 3: **Rev/Eff Send Control (all channels):** Adjust the amount of signal sent to the internal reverb and external effect (if used) with this control.
- 4: **Line Out Select Switch (channels 3 and 4):** When this switch is pressed in, the signal is removed from the line out buss. (For example, if you want a click track or other signal in your amp but not in the house mix, press in the switch for that signal's channel. The signal will still be in your amp, but not in the mix at the line out jack. You hear it, the house doesn't!)
- 5: **Instrument Level Control (channel 4):** An instrument level signal can be plugged directly into channel 4's instrument jack (#16). Adjust the level of the instrument with this control.
- 6: **Mic Level (channel 4):** A low impedance microphone signal can be plugged into channel 4's microphone input jack (#17). Adjust the input level of the microphone signal with this control. The adjacent peak LED (#7) will light when the signal is too hot.
- 7: **Mic Level Peak LED (channel 4):** This LED will light when the microphone input signal is near clipping. Under normal use, this LED might flash on peak signals. If the LED stays on, reduce the mic level control (#6).
- 8: **Low and High EQ:** Adjust the low and high frequency levels for channel 4 with these controls.
- 9: **Pan Control (channel 4):** This control proportions the signal between the left and right outputs.
- 10: **Graphic EQ:** Use this eight band stereo graphic equalizer to tailor the output of your amp to best suit your taste and room acoustics.
- 11: **Effects Return:** Adjust the overall amount of external effect (if used) with this control.
- 12: **Reverb Return:** Adjust the overall amount of internal reverb with this control.
- 13: **Master Level:** Adjust the overall output level of the amplifier with this control.
- 14: **Line Out Level:** Adjust the output level of the signal at the line out jacks (#19) with this control.



CRATE KX-220 Stereo Keyboard Amplifier

The Rear Panel:



15: Input Jacks (channel 1–3): Connection of an instrument, drum machine, tape deck channel, microphone or other high impedance (balanced or unbalanced) line level signal with 1/4" plug can be made here. For stereo inputs use the right/mono jack for the right channel input and the left jack for the left channel input. For two mono inputs into one channel, use the right/mono jack for one and the left jack for the other. For a single mono input into one channel, use the right/mono jack only.

16: Instrument Input Jack (channel 4): Connection of an instrument (such as a bass guitar) can be made here.

17: Microphone Input Jack (channel 4): Connection of a low impedance microphone can be made here. This XLR jack carries +16 volts phantom power on pins 2 and 3.

18: Effects Loop: Connection of an external effects unit can be made here. Plug a signal cable from the amplifier's send jack to the unit's input jack. Plug another cable (or, for stereo effects, a pair of cables) from the effect unit's output jack(s) to the amplifier's return jack(s). (Mono effects connect into the jack labeled right/mono.) The level of the effects can be controlled by the channel rev/eff send controls (#3) and the effects return control (#11).

19: Line Out Jacks: These pre-eq jacks allow connection to a mixing board, recording unit, or house PA system. (These are non-balanced output jacks.)

20: Preamp Out Jacks: These post-eq jacks allow connection to an external power amp. When a plug is inserted into the left preamp out jack, the amplifier's left channel signal is interrupted from its internal power amp and is routed only through the jack. This allows you to achieve a true stereo output if you connect your main KX-220's left preamp out jack to a second KX-220's power amp input jack (see #21).

21: Power Amp Input Jack: Connection directly into the KX-220's internal power amplifier is possible through this jack. The amp will ignore any other input signals, all control settings and any external effects, and will only amplify the signal sent into the power amp input jack.

22: External Speaker Jack: Connection to an extension speaker cabinet can be made here. The extension cabinet must have a minimum impedance of 4 ohms. This jack is in parallel with the internal speakers and using this jack does not disconnect them.

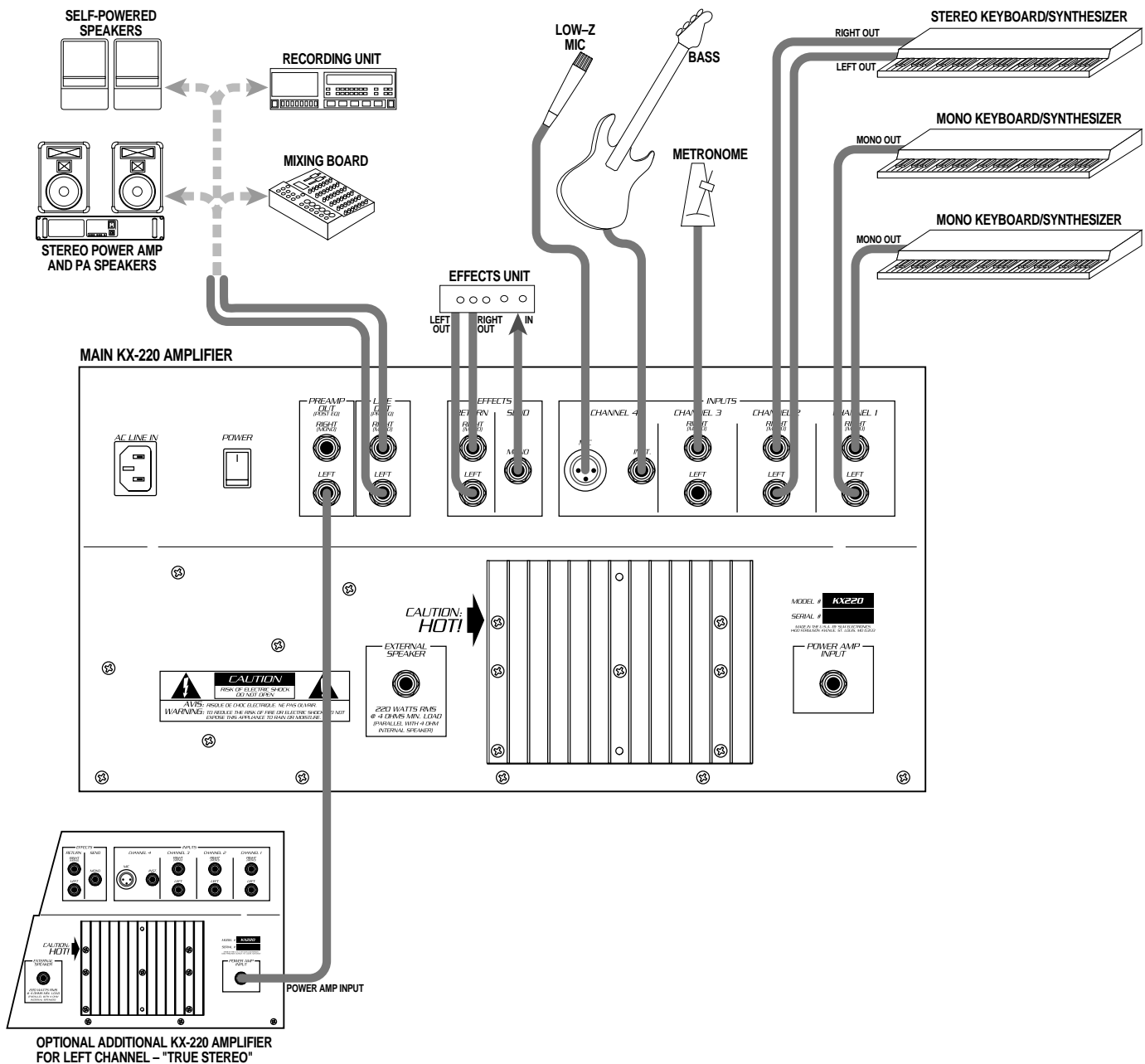
23: Power Switch: Turns the amplifier on (I) and off.

24: AC Line In: Connect the AC power cord here. Be sure the cord is properly plugged into a safely wired, grounded 120 volt, 60Hz AC power outlet before use. (If your amplifier was purchased outside the United States, refer to the rear panel for power ratings.) **For your safety, never attempt to defeat the ground connection on this cord.**

CRATE KX-220 Stereo Keyboard Amplifier

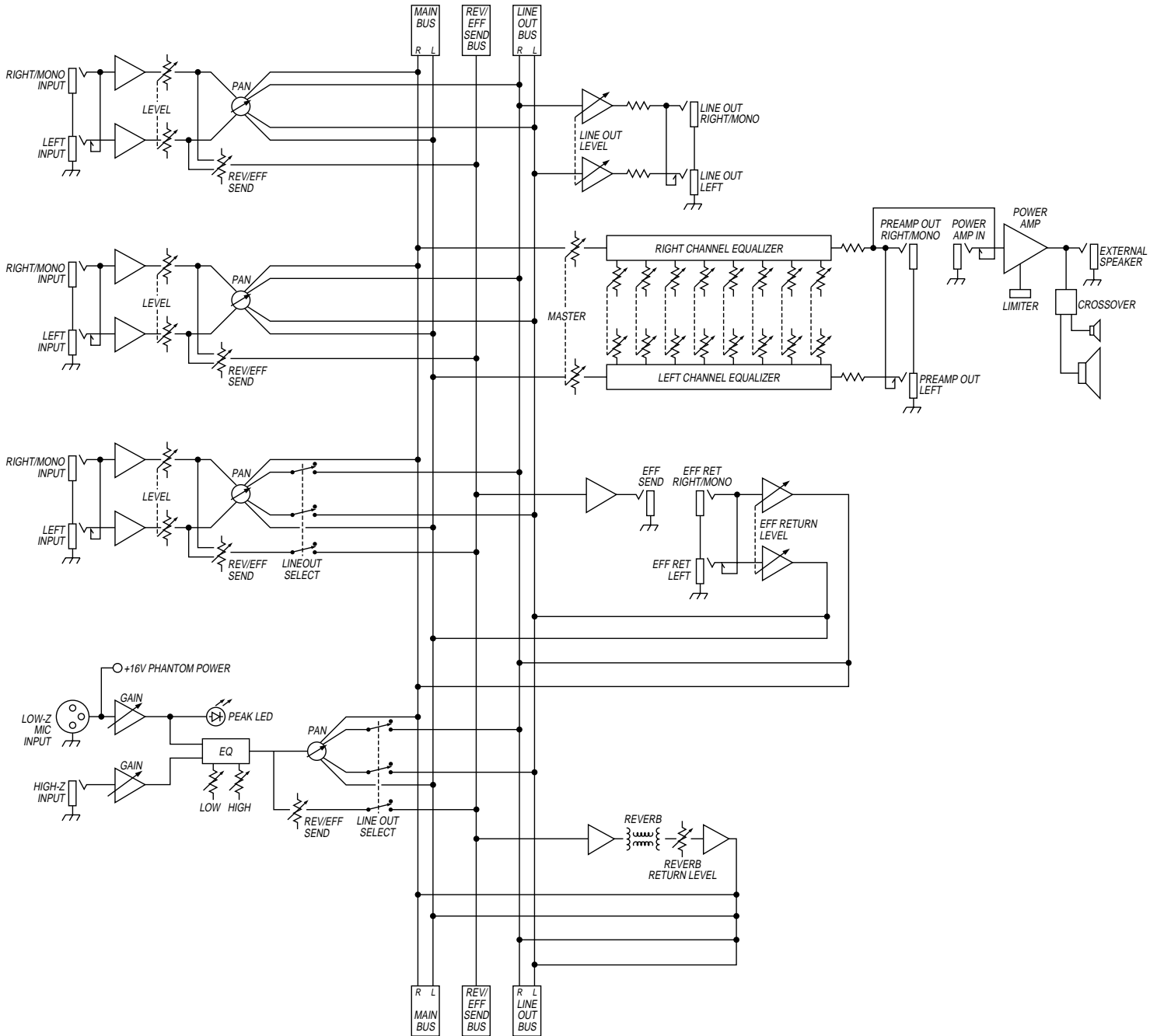
Sample Hookup Diagram:

In the diagram below, the two mono keyboards are both connected into channel 1. The channel 1 pan control lets you adjust the relative level between the two signals. The metronome plugged into channel 3 may be heard through the amplifier but *not* the house sound system if the line out select switch is pressed in. A stereo effects device has been connected to the effects loop, although a mono device can also be used. An additional KX-220 has been connected to the left channel preamp out jack, to achieve a true stereo output.



CRATE KX-220 Stereo Keyboard Amplifier

System Block Diagram:



CRATE KX-220 Stereo Keyboard Amplifier

Technical Specifications

| | | |
|--------------------------|--|--|
| Output Power Rating | | 160 watts RMS minimum @5% THD @ 4 ohm internal speaker 220 watts RMS with 4 ohm extension speaker |
| Maximum Signal Accepted | Channels 1,2,&3 Channel 4 Effects Return | Right/mono / Left: 6 volts peak to peak Instrument: 28 volts peak to peak; Microphone: 4 volts peak to peak Right/mono: 27 volts peak to peak; Left: 27 volts peak to peak |
| Nominal Input Impedance | Channels 1,2,&3 Channel 4 | Right/mono / Left: 22k ohm Instrument: 220k ohm; Microphone: 600 ohm |
| Gain | Channels 1,2,&3 Channel 4 Power Amp | Right/mono / Left: 30dB Instrument: 37dB; Microphone: 64dB 36dB |
| Channel 4 EQ | | Low: ± 10 dB @ 50Hz; High: ± 10 dB @ 10kHz |
| Master EQ | | ± 12 dB @ 40Hz, 100Hz, 225Hz, 625Hz, 1.6kHz, 4kHz, 8kHz, 16kHz |
| Line Out/Line In Levels | | 1 volt RMS typical |
| Input Power Requirements | | 120 VAC, 60Hz, 205VA 100/110 VAC, 50/60Hz, 205VA 230 VAC, 50/60Hz, 205VA |
| Limiter Range | | 20dB, maximum distortion 1% |
| Speaker Specifications | Low Frequency High Frequency | 15" Crate Custom Design, 2.5" voice coil, 56 oz. magnet 4"x4" Bullet Horn, 1" voice coil, replaceable phenolic diaphragm, 8 oz. magnet |
| Size and Weight | | 20.5" H* x 20.5" W x 17.5" D; 73 lbs (*add 1.5" for casters) |

Due to ongoing product development and improvement, the specifications contained herein are subject to change without notice.



www.crateamps.com

©1999 SLM Electronics, Inc. • A Division of St. Louis Music, Inc.
1400 Ferguson Avenue • St. Louis, MO 63133

47-046-01 • 02/99

