CE-Series
REFERENCE MANUAL

Some models may be exported under the name *Amcron*®

Obtaining Other Language Versions:
To obtain information in another language about the use of this product, please contact your local Crown Distributor. If you need assistance locating your local distributor, please contact Crown at 219-294-8200.

Note: The information provided in this manual was deemed accurate as of the publication date. However, updates to this information may have occurred. To obtain the latest version of this manual, please visit the Crown website at www.crownaudio.com.

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A Harman International Company

Important Safety Instructions

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with a dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.

12) Use only with a cart, stand, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15) To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Contents

The information furnished in this manual does not include all of the details of design, production, or variations of the equipment. Nor does it cover every possible situation which may arise during installation, operation or maintenance. If you need special assistance beyond the scope of this manual, please contact our Technical Support Group.

Crown Technical Support Group
Plant 2 SW, 1718 W. Mishawaka Rd., Elkhart, Indiana 46517 U.S.A.
Phone: **800-342-6939** (North America, Puerto Rico and Virgin Islands) or 219-294-8200
Fax: 219-294-8301
Internet: http://www.crownaudio.com

Da Rules

1. Read all safety and operating instructions before operating the CE-Series amplifier. Follow all instructions carefully and heed any warnings given.
2. Do not drop or spill any foreign object or liquid into the CE-Series amplifier.

3. **WARNING: Shock hazard. To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture. Do not immerse your CE-Series amplifier in any liquid. Do not operate your amplifier near a pool, bathtub or other standing water (even on a dare).**
4. Do not bypass or defeat the grounding or polarization means used on the CE-Series amplifiers. Make sure all blades on the polarized power plug can be fully inserted into the receptacle or other outlet that will be used with the unit.
5. Your CE-Series amp should be cleaned only with a damp cloth
6. Take care of the power cord attached to your CE-Series amplifier. Avoid situations where your cord might be stretched, pinched, or otherwise abused. Route it to avoid foot traffic. Pay special attention to the cord connector and attachment points.
7. Do not attempt to service this unit beyond instructions contained in this manual. Refer all servicing to the Crown Service Department.
8. Keep your CE-Series amplifier away from sources of heat, such as a radiator or oven. Do not cover or surround your amp with material which may retain heat, such as a blanket or curtain.
9. **Obtain assistance from qualified service personnel if any of the following occurs:**
   - The power cord or plug has been damaged in any way.
   - Foreign objects or liquid have fallen into the amplifier enclosure.
   - The amplifier has been exposed to rain or has been partially or totally immersed in any liquid.
   - The amplifier has been dropped or the chassis has been damaged.
   - You notice a marked change in performance, or your CE-Series amp does not appear to operate normally.
10. **CAUTION:** Do not locate sensitive, high-gain equipment such as preamplifiers or tape decks directly above or 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 other sensitive equipment at the top.

Keep these instructions where you can look at 'em later!

Lightning Bolt Symbol:
This symbol is used to alert the user to the presence of dangerous voltages and the possible risk of electric shock.

Exclamation Mark Symbol:
This symbol is used to alert the user to make special note of important operating or maintenance instructions found in the reference manual.

Did You Remember To

Quick Start!

You've waited a long time for this! We know you just can't wait to crank up your new Crown® *CE-Series* amplifier. And you sure don't want to flip through pages of tech-talk just to find out where the on switch is. So that's why we provided you with this quick and simple page to get you up and running right away. Just take a few minutes to read through this—no more than five or ten, max—you'll be glad you did.

1. Make sure the CE-Series amp and all other equipment is turned off ("O") before you begin wiring. By the way, the amp power switch is located on the far left side of the front panel. It is off ("O") when depressed on the left.
2. Mount your CE-Series amp securely in the rack, or position it on a solid surface.
3. Connect the left and right inputs coming from your mixer, preamp, or processor. You can use either balanced 1/4-inch (6.35-mm) phone, 3-pin XLR or barrier block connectors. You can also choose to run in MONO mode. (See Figure 2.5.)
4. Connect the output wiring (left and right speakers). You will need two (2) Neutrik Speakon® NL4FC mating connectors.

   WARNING: Output terminals marked with the ⚡ symbol are dangerous when live. External wiring connected to these terminals requires installation by an instructed person, or should make use of prebuilt wiring and connectors.
5. Connect your CE-Series amp and other equipment to the appropriate power source.
6. Turn on your mixer, preamp, signal processor, or any other equipment in your system EXCEPT your CE-Series amplifier. (Remember: the best is worth waiting for.)
7. Make sure the Channel 1 and Channel 2 level (volume) controls on your CE-Series amplifier are turned all the way down (counterclockwise), then flip the power switch on ("I"). Note: The Fault light blinks a few times, and the "Power" light will glow a bright green to indicate power is on.
8. (Now comes the fun!) Supply input, adjust amp levels and enjoy.
9. You can check the green signal light to verify input, if necessary.

   CAUTION: Excessive output levels may toast your speakers. Crown's CE-Series amplifiers have such low distortion, you may not realize the actual level being reached until it's too late. Please exercise caution and drive your speakers responsibly (or at least warn your neighbors!).

Get Your Speakons®?

Typical Stereo Hookup

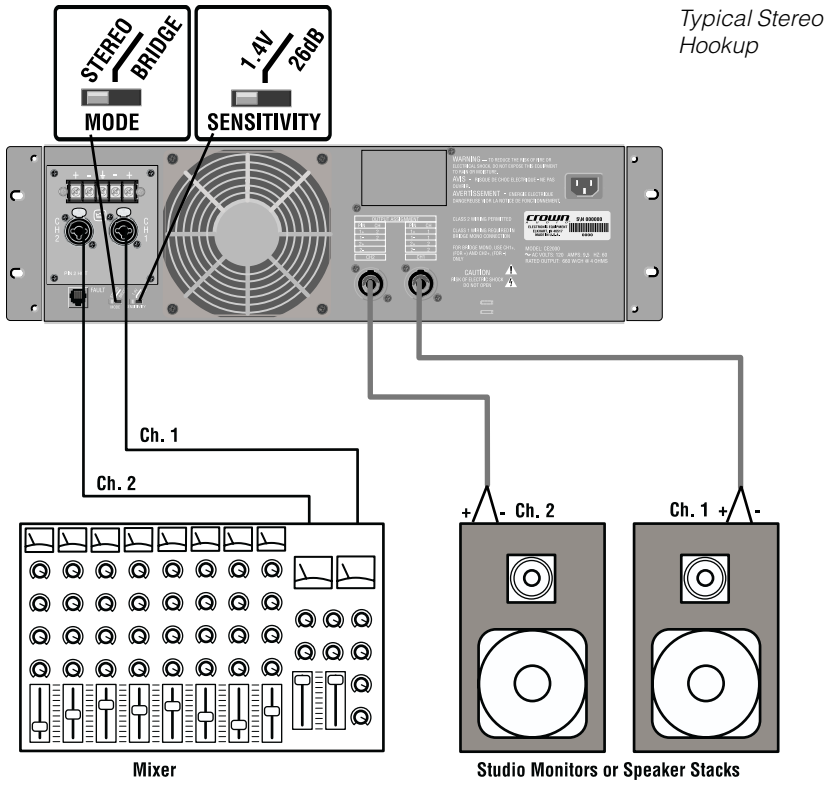


Fig. 1.1
The CE-Series Amplifier

1 Welcome

Thanks for buying this CE-Series amplifier. Here at Crown, we appreciate your support, and we think you'll find that you've also done yourself a favor by choosing Crown. That's because the CE-Series amps are REAL Crown amplifiers, designed by dedicated Crown engineers to fit your needs AND your wallet.

Yes, these Crown engineering dudes, cool guys that they are, thought that no one should be without that great Crown sound. So what if you're not running a pro tour (yet)? You deserve the best in amplified sound. And the best, of course, is still Crown. (My dad always said, it ain't braggin' if it's true.)

The engineers at Crown got together and thumbed their noses at those high-ranking corporate types who always want big stickers and huge markups. What they came up with is the CE-Series of amplifiers. We think you'll really like it.

So what else is special about the CE-Series?

First off, your CE-Series amplifier features all front-panel controls for ease of use. But—so you don't have to sacrifice security for comfort—the front panel level controls can be set, then removed entirely from the panel. Whether for long-term control in a fixed installation or short-term protection against unauthorized adjustments, this feature allows you to just set-and-forget your level controls.

Your CE-Series amp also comes with a modular input panel that can be replaced with a variety of optional SST (System Solution Topologies) crossover modules, specially designed to fit a range of pro audio requirements.* Or your amplifier may have come already outfitted with a factory-installed SST module.**

The standard input module offers your choice of 1/4- inch (6.35-mm) phone plug, XLR or barrier strip inputs. Optional SST modules offer a range of features, including 24-dB/octave Linkwitz-Riley tuned filters and sub-bass outputs for driving subs. See the Advanced Features and Options section in this manual for an overview of available Crown SST crossover modules.

* Crown SST modules can be added to existing amplifiers by an authorized Crown Service Center.

** For more information on your factory-installed SST module, please refer to the *Crown SST Crossover Reference Manual* included in your literature package.

Don't forget the impressive output. The CE 1000 produces an awesome 1,100 watts, while the CE 2000 pumps out 1,950 watts of power.* For output connectors, the CE-Series features genuine Neutrik Speakon® 4-pole connectors for quick, secure and safe connections.

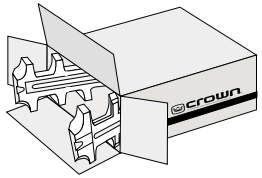
And, of course, there's no mistaking an CE-Series amp. Its rugged look will impress your friends almost as much as the Crown name.

How to Use This Manual

This manual will help you correctly install and set up and operate your CE-Series amplifier, including mounting, mode selection, standard input and output wiring, advanced features and options setup, and typical operation. Please be sure to read all instructions, warnings and cautions.

If your amplifier came equipped with an optional Crown SST crossover module, please refer to the *SST Crossover Reference Manual* included in your literature package for information on amplifier setup.

For your protection, please send in the warranty registration card today. And save your bill of sale—it's your **official proof of purchase**.



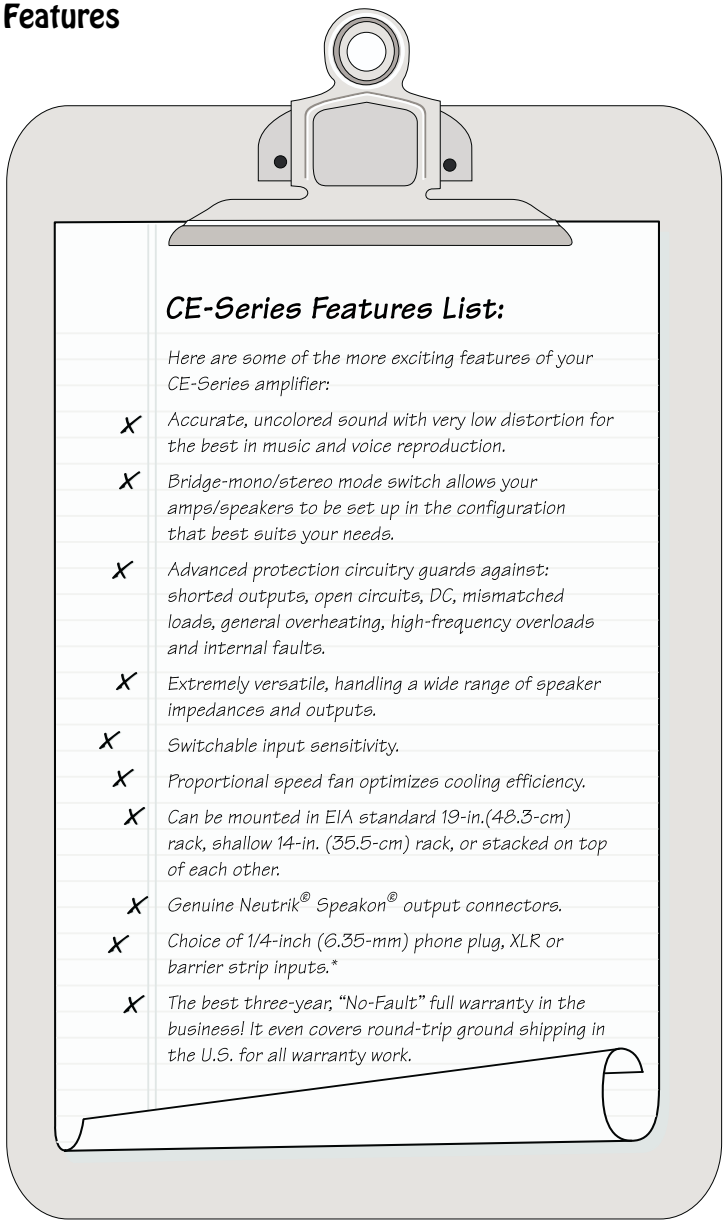
Unpacking Your CE-Series Amp

Please unpack and inspect your amplifier for any damage that may have occurred during transit. If damage is found, notify the transportation company immediately. Only you can initiate a claim for shipping damage. Crown will be happy to help as needed. Save the shipping carton as evidence of damage for the shipper's inspection.

We also recommend that you save all packing materials so you will have them if you ever need to transport the unit. **NEVER SHIP THE UNIT WITHOUT THE FACTORY PACK.**

* 1,100 watts and 1,950 watts total in Bridge-Mono at 4 ohms (for the CE 1000 and CE 2000 respectively), 560 watts and 975 watts per channel at 2 ohms. See the Specifications section for details.

Features

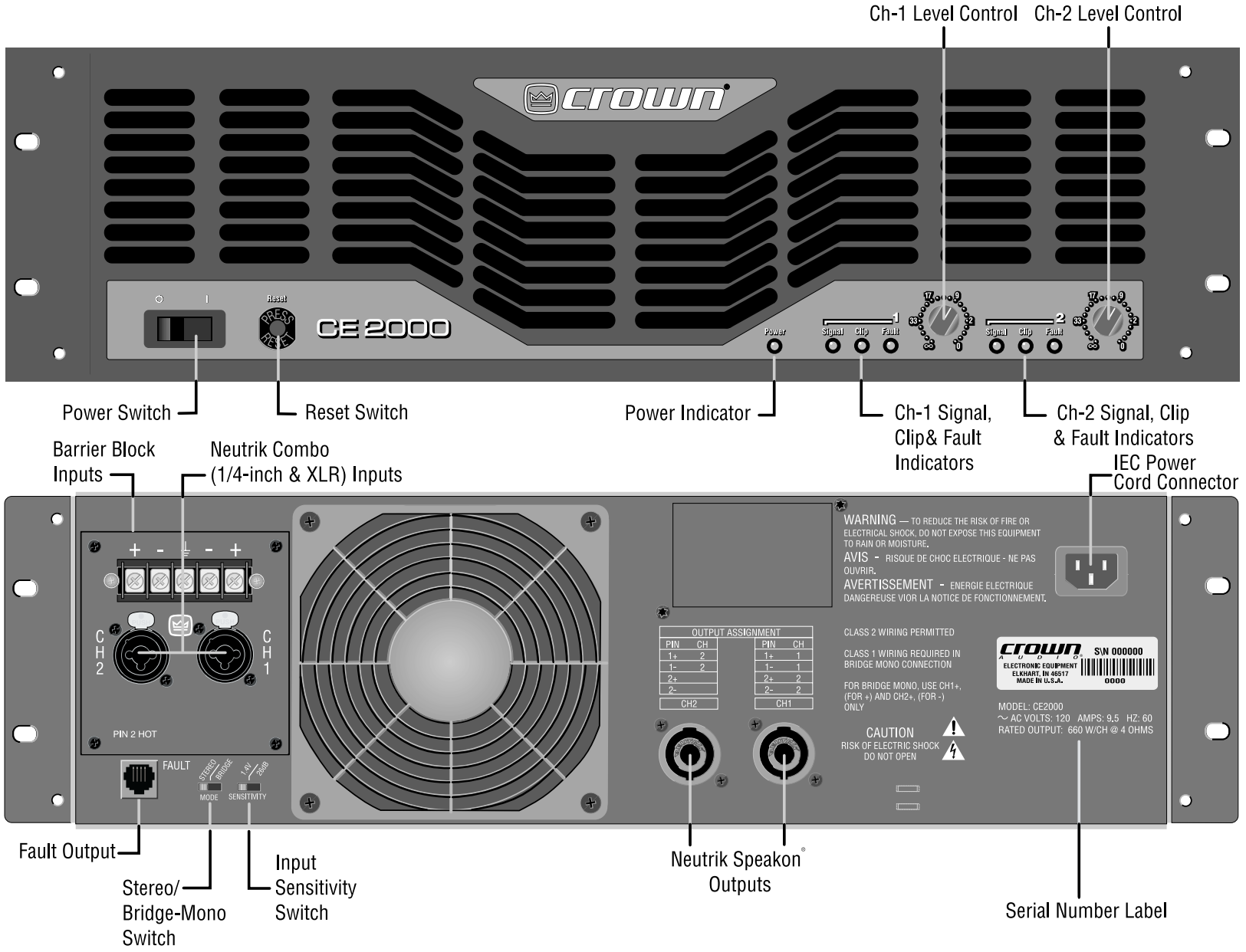


* Optional SST crossovers may provide other input connector options.

CE-Series Amps with an Attitude!

Controls, Indicators & Connectors

Fig. 1.2 The Big Picture: Controls, Indicators & Connectors



Reference Manual

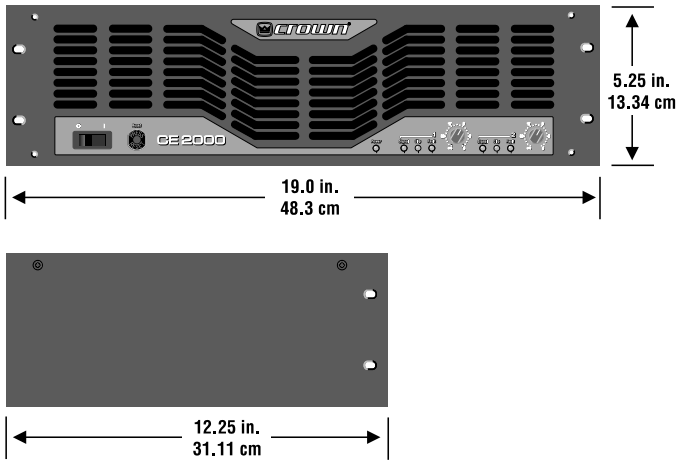
2 Installation

Follow these instructions for a detailed explanation of CE-Series installation procedures and options. If you just want to get up and running as quickly as possible, see the Quick Start section on page 6.

2.1—Begin with the amplifier turned off and disconnected from the power receptacle. The CE-Series power switch is located on the left side of the front panel; it is off ("O") when depressed on the left. Equipment that will be connected to the inputs of the amplifier (such as mixers,equalizers or signal processors) should also be turned off.

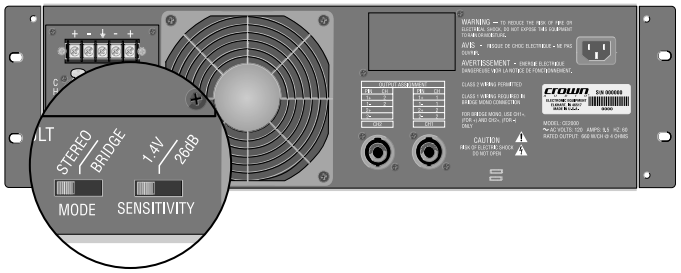
2.2—Mount the amplifier. Your CE-Series amp can be mounted in a standard, 19-inch (48.3-cm) equipment rack, or it can be simply stacked with other equipment. And since your CE-Series amp is not as deep as many amplifiers (only 12.25 inches (31.11 cm) behind the front panel), you can also mount it in the shallow, wall-mount racks. The CE-Series amps are provided with a convenient 3- foot (1-meter) power cord to minimize excess cordage when installed in a rack. Do not use extension cords. Properly wired power outlets must be provided close to the mounted amplifier.

Fig. 2.1 Mounting Dimensions



If you choose to mount your amp in a rack, you should secure the back of the rack as well as the front. Securing the amp at both front and rear will assure that the amp stays in place, even when the rack is transported or accidentally dropped (which we know never happens).

Fig. 2.2 Mode Switch



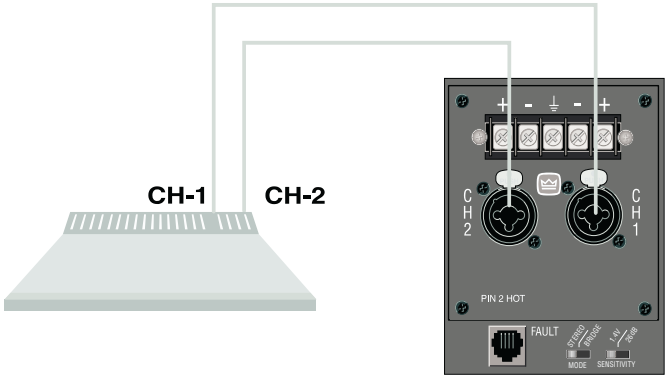
2.3—Set the mode switch. Make sure your amplifier is turned off ("O") before moving this switch. The Mode switch should be in the "Stereo" position when you're running in Stereo Mode. Stereo Mode allows independent inputs on the left and right channels to feed separate speakers at the output. It's the configuration typically chosen for everyday audio applications.

Turn the Mode switch to "Bridge-Mono" to have a single input that feeds to a single output with **twice the voltage of Stereo Mode.** Use this configuration if you want to give up stereo capabilities in order to drive your speakers ***louder.*** **Note that the wiring will also need to be adjusted for this configuration—that includes both input and output wiring. See Step 5 later in this section for correct wiring when running in Bridge-Mono mode.**

2.4—Connect the inputs of the CE-Series amp to your mixer, equalizers, or signal processors ahead of the amp. Three types of balanced input connectors are provided, allowing you to choose barrier strip, 1/4-inch (6.35-mm) phone or 3-pin XLR connectors.* You can also choose to use either balanced or unbalanced wiring. (See the information on "Balancing the Line" in the Crown Pro Information Guide section for an explanation of balanced vs. unbalanced wiring.)

*Optional SST crossover may provide other input connector options.

Fig. 2.3 Typical Input Wiring



If the Mode switch is in "Bridge-Mono" position, only the Channel 1 input connectors should be used.

2.5—Connect the outputs of the CE-Series amp to your loudspeakers. For Stereo mode, refer to the Stereo Output Hookup diagram (Figure 2.4). For Bridge-Mono mode, refer to the Bridge-Mono Output Hookup diagram (Figure 2.5).

WARNING: Output terminals marked with the ⚡ symbol are dangerous when live. External wiring connected to these terminals requires installation by an instructed person, or should make use of prebuilt wiring and connectors.

Input Wiring Tips

1. For all input connectivity, use shielded wire only. Cables with a foil wrap shield or a high-density braid are superior. Cables with a stranded spiral shield, although very flexible, will break down over time and cause noise problems.

2. Try to avoid using unbalanced lines with professional equipment. If you have no choice, keep the cables as short as possible. (Refer to the information on "Balancing the Line" in the Crown Pro Information Guide section.)

3. To minimize hum and crosstalk, avoid running low-level input, high-level output and AC power feeds in the same path. Try to run differing signal paths at 90° to one another. If you must use a common path for all cables, use a star-quad cable for the low-level signals.

4. When changing input connectors or wiring, turn the amplifier level controls all the way down (counter-clockwise) before connecting or disconnecting input plugs.

5. When changing output connections, turn the amplifier level down and the AC power off to minimize the chance of short-circuiting the output.

Output Wiring Tips

1. Although this amp has Speakon connectors to minimize wiring mistakes, we encourage you to choose carefully when selecting speaker enclosure connectors.

2. To prevent possible short circuits, wrap or otherwise insulate exposed loudspeaker cable connectors.

3. Do not use connectors that might accidentally tie conductors together when making or breaking the connection (for example, a standard, 1/4-inch (6.35-mm) stereo phone plug).

4. Never use connectors that could be plugged into AC power sockets. Accidental AC input will be an electrifying experience for your equipment. But you will find out real quick if your speakers are any good at 60 Hz.

5. Avoid using connectors with low current-carrying capacity, such as XLRs.

6. Do not use connectors that have any tendency to short.

7. To maintain good bass response, use the lowest DC resistance cable you can afford and will terminate safely in your connectors.

You will need two high-quality speaker cables terminated with Neutrik® Speakon® NL4FC connectors at one end and appropriate connectors to fit your speakers at the other end.

If you prefer, you can wire custom speaker cables to fit your exact requirements. Detailed instructions on wiring and assembling the Neutrik® Speakon® NL4FC connectors are provided in Crown's *Guide to Neutrik® Speakon® NL4FC Connector Assembly* (found in the literature package shipped with your CE-Series amplifier). You will need two (2) Neutrik Speakon® NL4FC connectors* plus high-quality two- or four-conductor speaker cable with the appropriate end-connectors to fit the inputs on your speakers, a

WIRING SPEAKON® OUTPUT CONNECTORS:

See the *Guide to Neutrik® Speakon® NL4FC Connector Assembly* included in your literature package.

* You can purchase the Speakon® NL4FC connectors from your local dealer, or contact NEUTRIK AG, Im alten riet 34, Schaan FL-9494, Furstentum Liechtenstein, 011-41-75-237-2424, FAX 011-41-75-232-5393, www.neutrik.com or Neutrik USA, Inc., 195 Lehigh Ave., Lakewood, NJ 08701-4527, (908) 901-9488, Fax (908) 901-9608, www.neutrikusa.com or Crown Audio, Inc., 1718 West Mishawaka Road, Elkhart, IN 46517-4095, USA, 219-294-8000, FAX 219-294-8329, www.crownaudio.com.

Why Speakon?

For amplifiers, the most popular termination device on professional products has been the dual banana (which incidentally was pioneered by Crown with the DC300 model). However, recent regulatory requirements in Europe have outlawed the use of the dual banana plug and forced users to terminate speaker cables with spade lugs or bare ends—an approach that is clearly not advantageous to the customer who wants to reconfigure his system or quickly change out a defective product. It is possible that similar regulatory controls will appear worldwide over the next few years.

One solution to this problem is to use the Neutrik Speakon® connector. Here at Crown, we wanted to develop a system for you that eliminated the need for specialized, time-consuming, interface cables. The major loudspeaker manufacturers have been using Speakon connectors for the input termination on their products for several years now, so you can be assured of the connector's reliability in the workplace. With Speakon connectors, you can plug straight from the amp to the speaker, and start making those great sounds right away.

The Speakon connector used on this amplifier meets all known safety regulations. Once wired correctly, the connector cannot be plugged in backwards, causing the type of inverted polarity situations that are common with banana hookups. It will provide a safe, secure and reliable method of interfacing your amplifier to the load.

pair of needle-nosed pliers and a 1/16-inch Allen wrench or a flat blade screw driver to assemble the Speakon® connectors.

2.6—Check to make sure that adequate ventilation has been provided. Even though this amplifier has some of the most efficient heat sinks in the marketplace, it must be able to breathe. So make sure that the front vents are never blocked and that the exhaust fan (out the back) is not blocked or covered by cables.

Cooling Tips

If you allow spaces between pieces of equipment in your rack, make sure you block the front with blank, solid (not perforated) panels. This will allow the rack to act as a chimney with hot air exhausting at the top, not recirculating between adjacent amplifiers.

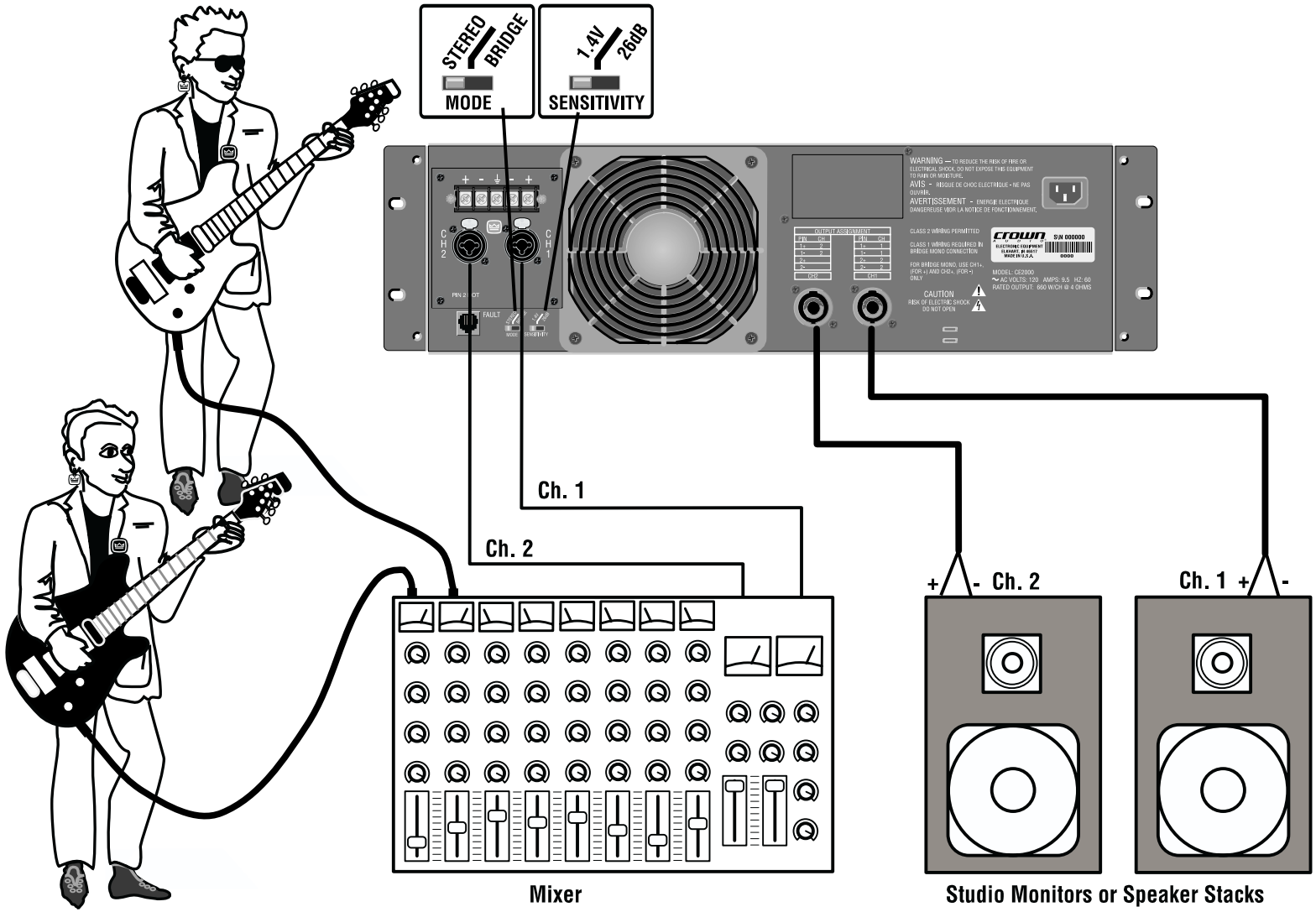
An amplifier running at high sound pressure levels into low-impedance loads, will typically put out lots of hot air, so make sure it can go somewhere.

If you are running your equipment in dusty or dirty environments, it is advisable to pre-filter the air using industrial furnace filters. These filters can be taped or fastened to the front of the equipment rack, ensuring a clean air supply through a large surface area that will require minimum maintenance.

2.7—Check once more to make sure the amplifier has been set up correctly. Then follow the steps in the Operation section to operate the amplifier.

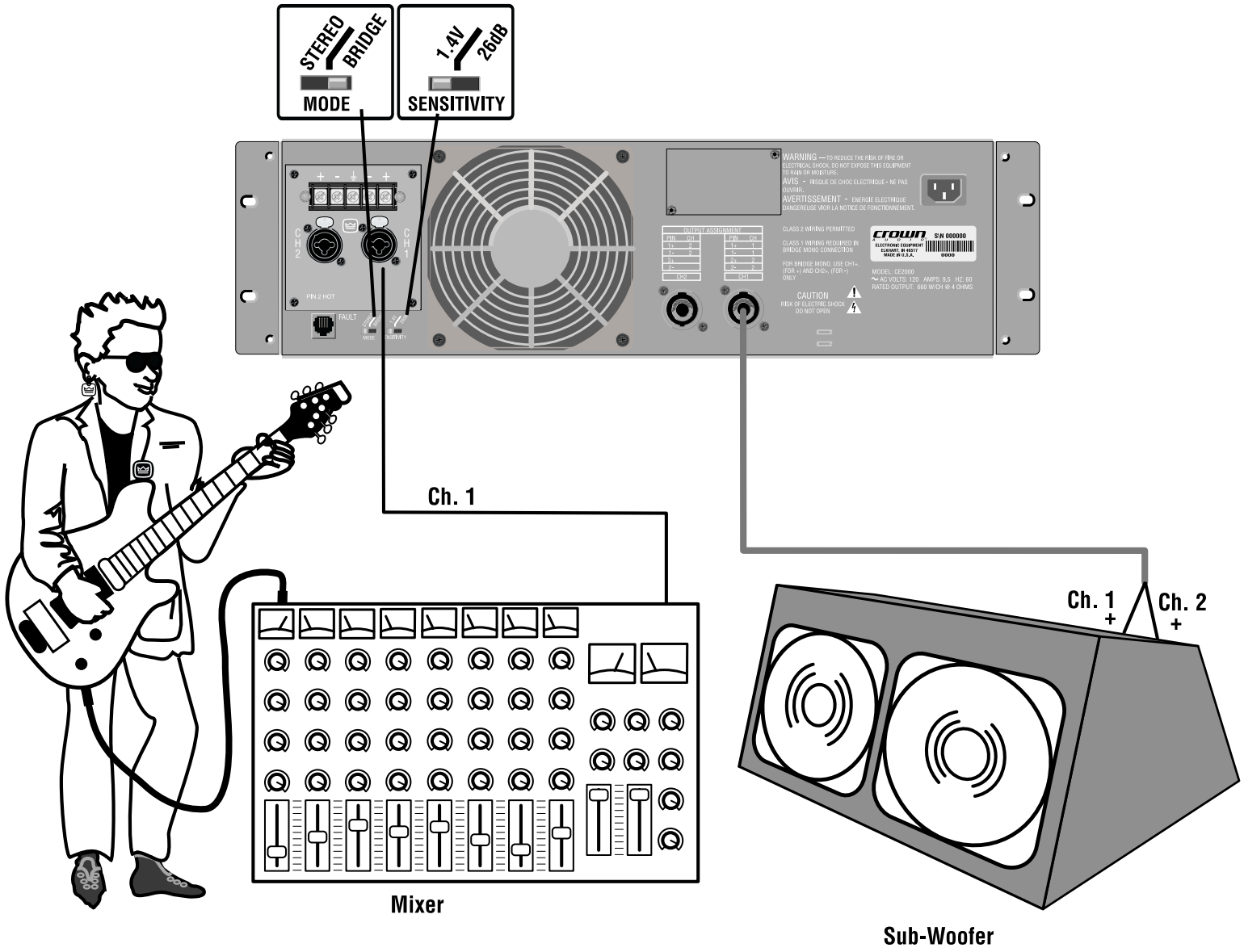
CE-Series Amps with an Attitude!

Fig. 2.4
Stereo Hookup—Two Stacks, One Amp, Stereo In, Stereo Out



CE-Series Amps with an Attitude!

Fig. 2.5
Bridge-Mono Output Hookup—Great for Subs...or When You Want It WAY LOUD!



3 Operation

Your CE-Series amp is really very easy to operate, once it has been properly configured. If your amplifier has not yet been set up or configured, please refer to the installation instructions found in Section 2 of this manual, or consult with your system installer.

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 "∞" (off).
2. Turn down the amplifier's level controls (counter-clockwise to "∞").
3. Turn the power switch to the on ("I") position. The power indicator beside the switch will turn on.
4. After the Power light turns on, test the operating range of your input by turning up the level of your audio source to the highest possible operating level before distortion. You should notice the green signal indicators glowing on your amplifier.
5. S-L-O-W-L-Y turn up the level controls on the front of the amplifier until the maximum desired loudness or power level is achieved. Be prepared for astounding output!
6. Turn down the level of your audio source to its normal range.

Controls & Indicators

Refer to the following for information on how to operate and read your CE-Series controls and indicators. See Figures 3.1 and 3.2 for location of controls and indicators.

Power Switch: The power switch is conveniently located on the front panel so you can easily turn the amplifier on ("I") or off ("O"). When the switch is depressed left, the amp is off.

Note that dangerous voltages may still be present in the amplifier even when the power switch is in the off ("O") position. Before moving the amplifier or making any wiring or installation changes, it is important to also disconnect the power cord from the amplifier or power source.

Reset Switch: A push button reset switch is located on the front panel and is used to reset the circuit breaker that protects the power supply.

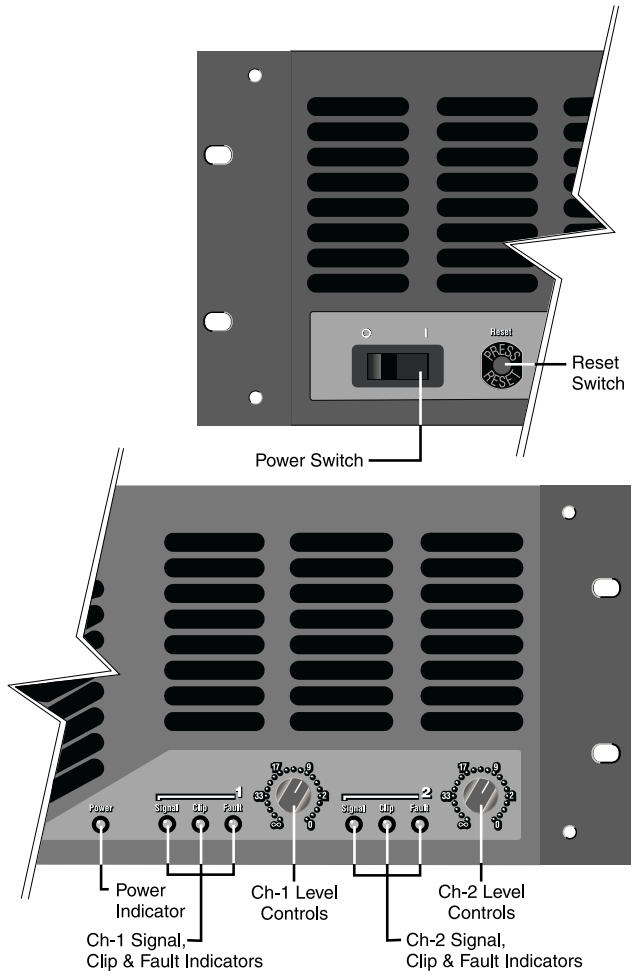


Figure 3.1 Front Panel Indicators & Controls

Fault Indicators: Two red LEDs (one for each channel) are located on the front panel. The Fault Indicators are normally OFF, but will blink under five different conditions:

1. When the amplifier is first powered up, until the unit is ready for operation.
2. If the heatsinks reach a temperature above normal working limits.

3. If the transformer thermal protection circuit is activated.
4. If amplifier output wires develop a short-circuit.
5. Should the amplifier output stage become non-operational.

The fault status of the amplifier can also be monitored remotely by attaching a signalling device to the Fault jack located on the amplifier back-panel. See the Advanced Features and Options section of this manual for more information on fault monitoring and suggestions for signalling device circuity.

Some fault conditions may cause the output of the amplifier to be muted.

Clip Indicator: Two red LEDs (one for each channel) are located on the front panel. The Clip indicators turn on when distortion is audible in the amplifier output.

Signal Indicator: Two green LEDs (one for each channel) are located on the front panel. Unlike some of our other amplifiers, the Signal indicators on the CE-Series amplifier Illuminate when a signal (> –40 dBm) is present at the ***INPUT*** of the amplifier for that channel. Because these indicators receive the signal before the level controls, they can be used to troubleshoot wiring problems within a system. If the Signal indicator for a channel is not lit, no signal is reaching the amplifier on that channel.

Power Indicator: A green LED is located on the front panel. The Power indicator lights when your CE-Series amp has been turned on and has power.

Level Controls: Two rotary level controls (one for each channel) are located on the front panel. Use these controls to adjust each channel's output. To decrease the level, rotate the control counter-clockwise (to "∞"). To increase the level, rotate it clockwise (to "0").

If you wish, the level control knobs may be pulled from the front panel and the holes plugged with the supplied caps to minimize tampering of control settings.

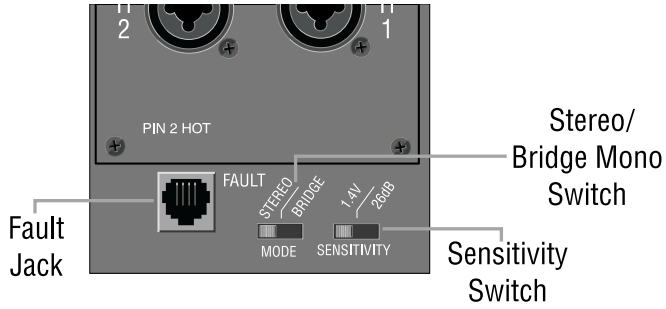


Figure 3.2 Back Panel Controls

Input Sensitivity Switch: A two-position Input Sensitivity switch is located on the back panel near the input connectors. Your amplifier is shipped from the factory with this switch set to the 1.4-V position. At this setting , a 1.4-V input signal will drive the amplifier to full power into an 8-ohm load when the level controls are turned to maximum. This setting works best when the amplifier is being driven by equipment with a +4 dBu output—an output level at which most professional equipment operates.

If required, the Input Sensitivity switch can be moved to the 26-dB position, so that the amplifier provides a fixed voltage gain of 20 (or 26 dB: 1 volt in, 20 volts out). This setting works best with output levels of +10 dBu (2.5 volts RMS) or more. Some brands of DJ mixers, in particular, have output levels in this range.

Selecting the correct sensitivity will allow your equipment to operate at its optimum level and improve the signal-to-noise of the system.

Mode Switch: This two-position switch, located on the back panel, allows the selection of either Stereo or Bridge-Mono mode of operation.

Stereo mode provides identical power output to each of the two amplifier output channels. Bridge-Mono mode combines the two amplifier output channels into a single mono channel with twice the voltage of a single stereo channel. This means the output will be much more powerful! It does this by bridging the outputs, and it requires special output wiring. **Do NOT select Bridge-Mono mode without first making sure the amplifier has been wired in a Bridge-Mono configuration.** For more information on wiring for Bridge-Mono mode, see the Installation section of this manual, or consult your system installer.

When Bridge-Mono mode is selected, only the Channel 1 Level control and the Channel 1 Signal LED will work. If the Channel 2 input is wired, the Channel 2 Level control should be turned to "∞" (counter/anti-clockwise) to prevent distortion.

Fault Jack: This RJ-11 jack (which looks like a phone jack) is located on the back panel. By attaching a signalling device to the Fault jack, you can monitor the amplifier's Fault status from a remote location. See the Advanced Features and Options section of this manual for more information on fault monitoring and suggestions for signalling device circuitry.

4 Crown Pro Information Guides

Balancing the Line

A balanced audio circuit typically will have both positive (+) and negative (–) legs of the circuit isolated from the ground circuit. These balanced legs exhibit identical impedance characteristics with respect to ground, and may also carry the audio signal at the same level, but with opposite polarities. This results in a line that offers excellent rejection of unwanted noise.

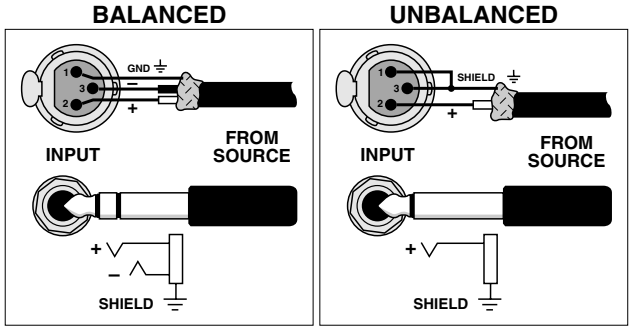


Fig. 4.1 Balanced & Unbalanced Input Wiring

On the other hand, an unbalanced circuit usually holds one leg at ground potential, while the second leg is "hot." Unbalanced line is less expensive, but is much more susceptible to noise, and is not usually used in professional applications. For the cleanest signal, without unwanted hum and buzz, balanced line is always recommended. It is especially helpful if you have a long cable run (over 10 feet (3 m)), since noise is easily introduced into long, unbalanced lines.

1/4 inch (6.35 mm)				**XLR**
Tip	=	+	=	Pin 2
Ring	=	–	=	Pin 3
Sleeve	=	⏚	=	Pin 1

Fig. 4.2 Polarity Conversions

Refer to Figure 4.2 for proper pin assignments for both 6.35-mm and 3-pin XLR balanced audio wiring.

Hum and Buzz Tips

1. It is imperative that all of your electrical equipment share the same power ground reference.
2. Unless you are interfacing to a microphone, the shield of the cable should only be connected at one end. (See Fig.4.3)
3. Do not pass signal ground between electrical components in a grounded source system.
4. If you wish to avoid ground loops, it doesn't matter if you lift the input or output signal ground for your system topology, just be consistent. Personally I prefer to lift the input signal ground and it has always been successful...so far!
5. NEVER use a ground lift adapter to lift the power ground on a 3-wire AC cord; this is not its intended purpose. It is better to have it SAFE than SILENT!! Look for the true source of the noise.
6. Even when interfacing to an unbalanced load, it is preferable to use two-conductor shielded cable.
7. Get rid of the lighting company!

The Dastardly Duo: Dr. Hum and Mr. Buzz

If you have noticeable hum or buzz in your system, you may want to check your cable connections to see if the unwanted noise is being introduced via a ground loop. To determine the proper wiring, first check whether the output from your source is unbalanced or balanced (if you don't know, refer to the unit's back panel or instruction manual). If the source is balanced, refer to Figure 4.3; if it is unbalanced refer to Figure 4.4. Next, determine if the source's power cable is floating (ungrounded, 2-prong) or grounded (3-prong). Finally, if the source is unbalanced, check the type of wiring: twin-lead or single coax.

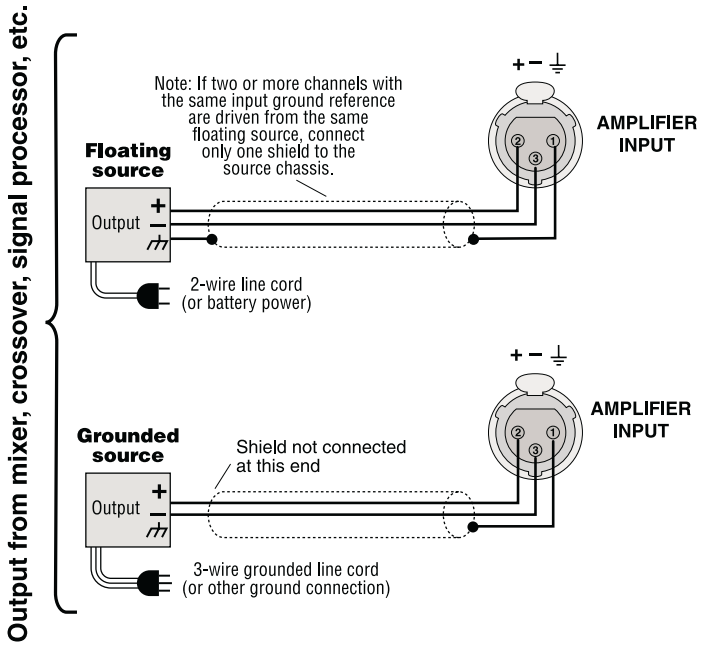


Fig. 4.3 Balanced Input Wiring

Check Figure 4.4 to see if your cable has been wired with the proper shield and ground connection. If the cabling is incorrect, you may be able to avoid the ground loop (and associated hum) by plugging all of your equipment into the same AC circuit (on the same breaker). If this is impractical, you will need to fix the cable to match the appropriate illustration. Or you may want to simply replace the offending cable with a commercially manufactured cable of the appropriate type.

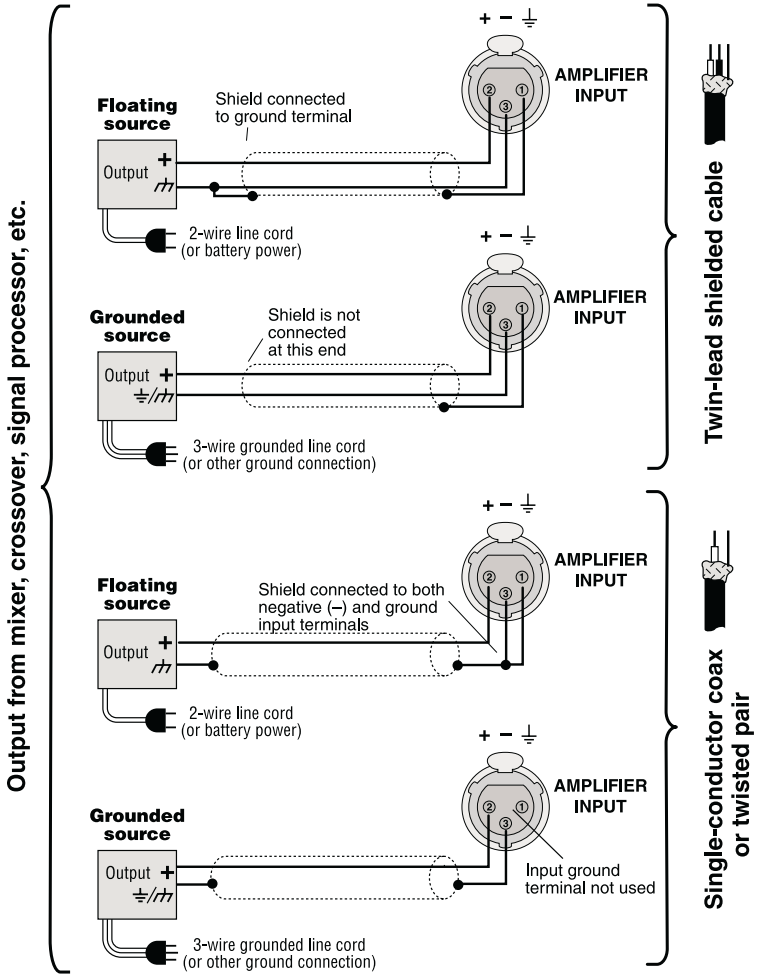


Fig. 4.4 Unbalanced Input Wiring

5 Advanced Features & Options

Crown SST Modules

Crown optional SST (System Solution Topologies) modules were specially designed to improve the fidelity and versatility of your audio system. They feature a variety of professional signal routing and filtering capabilities, with active crossovers that allow the audio signal to be split and sent to auxiliary amplifiers. Your amplifier may have come with an SST module already factory-installed, or your choice of SST modules can be easily added to the amplifier by any authorized Crown Service Center.

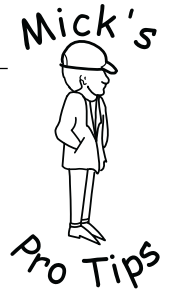
For information on wiring and configuration of amplifiers equipped with an optional Crown SST crossover module, please refer to the *SST Crossover Reference Manual* included in your literature package.

Refer to the following descriptions for an overview of available Crown SST crossover modules.

SST-MX Crossover

The SST-MX crossover module features 24-dB/octave Linkwitz-Riley tuned filters and stereo sub-bass outputs for biamp operation of subs. See Figure 5.1 for SST-MX block diagram.

Features of the SST-MX crossover include:



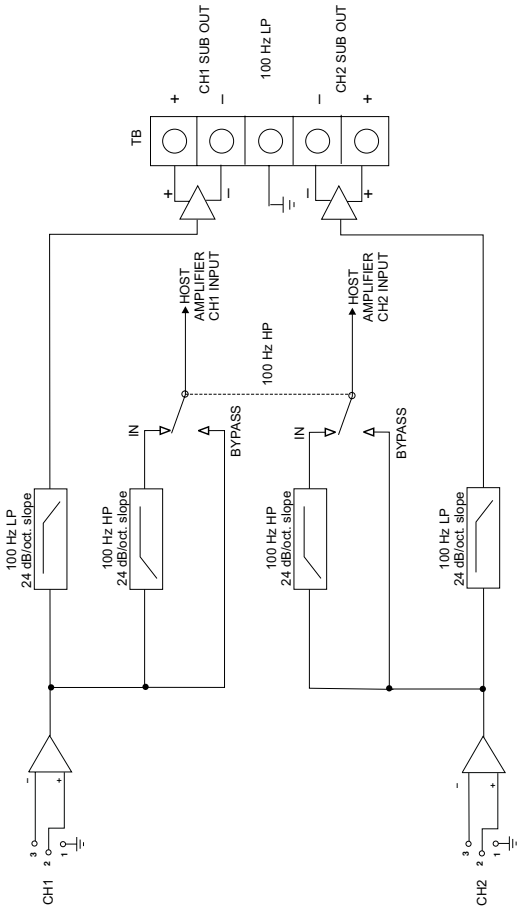
Why Biamped?

When you use one of Crown's SST crossover modules to split the power drive to your loudspeaker components, you gain a wide range of advantages, including:

1. Increased gain because the insertion loss of passive crossover networks is eliminated.
2. Consistent power bandwidth: power bandwidth is changed in multiway passive systems if transducers change impedance or vaporize (blow up).
3. Levels can be matched more accurately to the components.
4. Quicker troubleshooting.
5. Improved dynamic range.
6. Better protection of components due to steep 24-dB/octave filters.

- Stereo biamp.
- 100-Hz fixed crossover
- 24-dB/octave Linkwitz-Riley tuned filters.
- Neutrik® Combo ¼-inch (6.35-mm) and XLR input jacks.
- Barrier block balanced outputs.
- Optional high-pass filter bypass on amplified outputs adapts system for full-range use.

Fig. 5.1 SST-MX Crossover Block Diagram



SST-SX Crossover

The SST-SX crossover module features 24-dB/octave Linkwitz-Riley tuned filters and mono-summed sub-bass outputs for biamp operation of subs. See Figure 5.2 for SST-SX block diagram.

Features of the SST-SX crossover include:

- Mono-summed sub-bass output.
- 24-dB/octave Linkwitz-Riley tuned filters.
- Crossover switchable between 80 and 120 Hz.

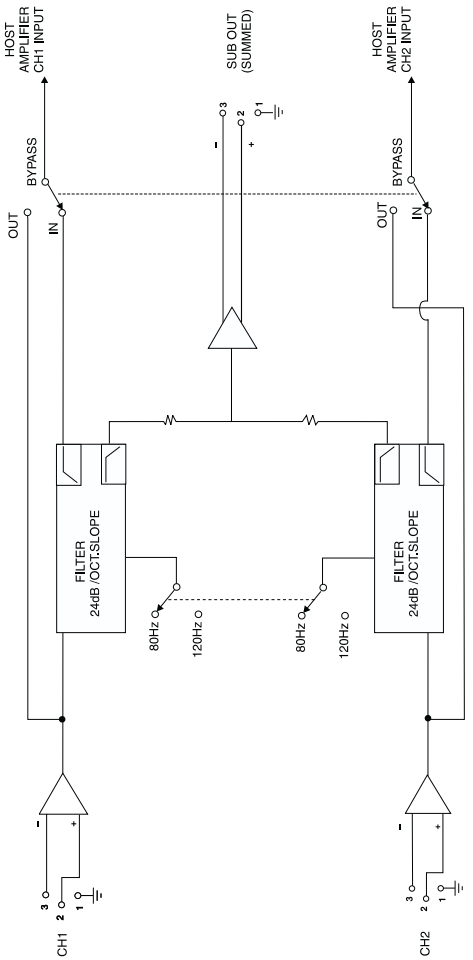


Fig. 5.2 SST-SX Crossover Block Diagram

- Neutrik® Combo ¼-inch (6.35-mm) and XLR input jacks.
- Male 3-pin XLR outputs
- Optional high-pass filter bypass on amplified output adapts system for full-range use.

SST-SBSC (Summed Bass Stereo Crossover) Module

Crown's advanced SST-SBSC module offers ten user-specified crossover frequencies, CD horn EQ and summed sub-bass output for driving subs (see Figure 5.3 for block diagram). The SST-SBSC offers the following features:

- Stereo biamp.
- 12-, 18- and 24-dB (Linkwitz-Riley) / octave filters.
- CD horn equalization.
- Mono summing of sub-bass output for driving subs.

Crown plans to release additional accessory plug-in modules offering a range of advanced features and capabilities. Watch for new releases.

Fault Monitoring

The Fault (RJ-11) jack, which looks like a telephone plug, is located on the back of your CE-Series amplifier. It gives you an easy way to remotely monitor the amplifier's fault status. To set up a circuit that will cause an LED to light whenever a fault status occurs, you can simply use the suggested circuit shown in Figure 5.4.

Figure 5.3 Block Diagram for Crown's SST-SBSC

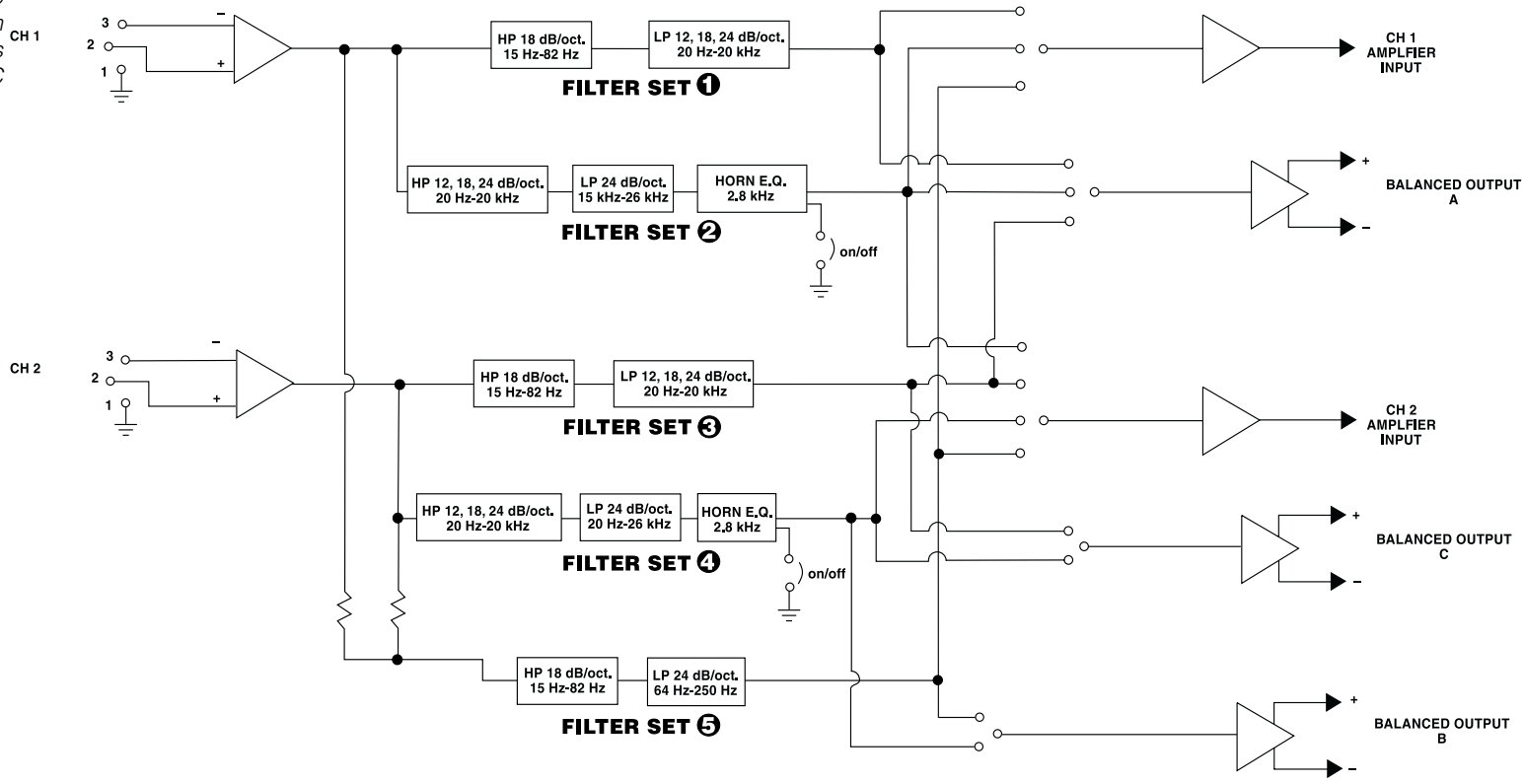
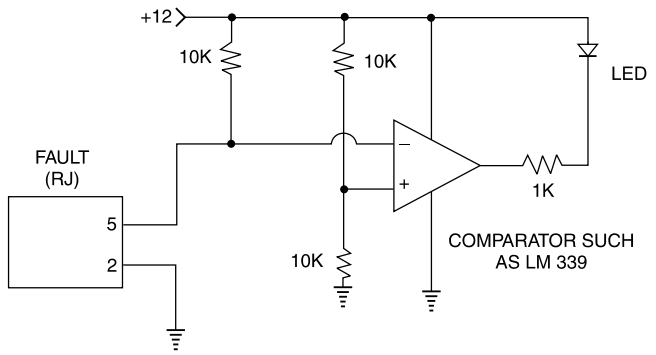
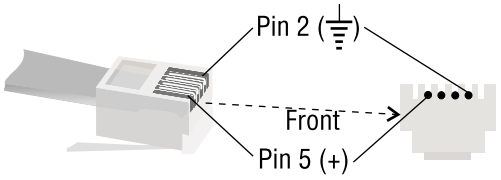


Fig. 5.4
Fault Status
LED Circuitry



When using this circuit, the LED will glow whenever the amplifier is in one of four states: a channel's heatsink has reached its temperature limit, the transformer has reached its temperature limit, the amplifier has just been turned on and is in its turn-on-delay mode, or the amplifier is turned off.

Fig. 5.5
RJ Jack Wiring
and Pin
Assignments



If you choose to design your own circuit to interface this signal to your system, note that this RJ jack is polarity sensitive. Pin 2 must be grounded, and Pin 5 must be supplied with a positive voltage pull up (positive with respect to ground). Refer to Figure 5.5 for RJ jack pin assignments.* The maximum signal that can be exposed to the fault jack is 35 VDC and 10 mA. Best results are obtained with 10 mA LEDs.

* The mating connector for the CE-Series RJ-11 jack contains 4 contact pins in a 6-slot case, as shown. For additional information please contact your local dealer or Crown Technical Support.

Handle Kit

Handles complement your amplifier's appearance, aid in transportation, and the placement in or removal from racks. They are available from Crown's Sales Department.

Alternate Output Connectors

For added system flexibility, Crown offers optional secondary output connectors, with a choice of either model *CEAS1* barrier block (see Figure 5.6) or model *CEAS2* 5-way binding post connectors (see Figure 5.7). Alternate output connectors may come factory installed on new amplifier orders. They can also be added to existing CE-Series amplifiers by an authorized Crown Service Center.* For more information, please contact Crown Technical Support.

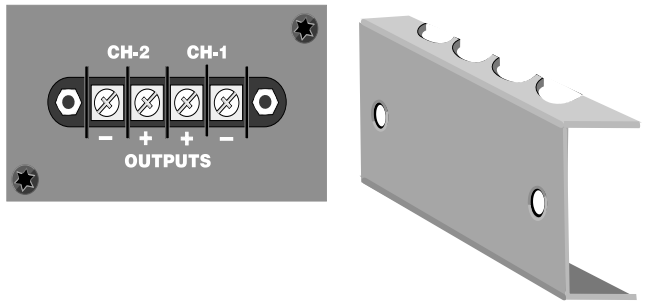


Fig. 5.6
Model CEAS1
Barrier Block
Output
Connectors

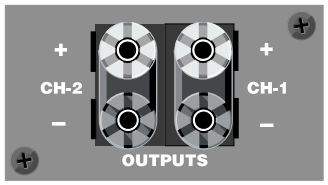


Fig. 5.7
Model CEAS2
5-way Binding
Post Output
Connectors

* For older CE-Series amplifiers, an externally mounted adapter kit is available. Request Part # CES1 (barrier strip) or Part # CES2 (5-way binding post).

Tamper-Resistant Hole Plugs

Your CE-Series amplifier comes with a set of tamper-resistant hole plugs, which allow you to "protect" the level controls against unauthorized adjustment. To use, simply pull off the control knobs from the front of the amp, and slip the hole plugs into place (see Figure 5.8). The plugs should slide easily into position, without forcing. Once in place, the plugs will help to avoid most accidental or intentional tampering (some situations may require additional security measures).

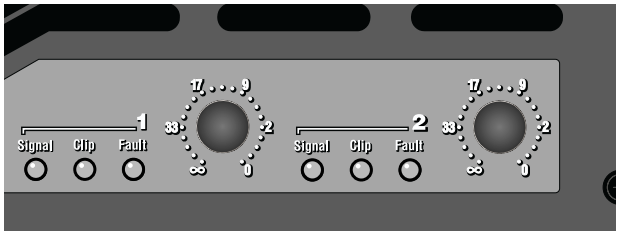


Fig. 5.8 Tamper-Resistant Hole Plugs Installed in a CE-Series Amplifier

To remove the hole plugs, simply pry the plug away from the amplifier case using a small, flat-blade screwdriver. To help to ensure adequate security, the plugs have been designed to be more difficult to remove than to place into position. If necessary, additional hole plugs can be purchased separately from Crown's Parts Department (Part # 103234-1).

Store your knobs in a safe location should you need to make level adjustments in the future.

Optional 0.775-V Input Sensitivity Setting

The CE-Series amplifier also provides an optional 0.775-V input sensitivity setting. If you determine your application requires this sensitivity setting, please contact Crown Technical Support for more information.

6 Principles of Operation

For the sake of simplicity, only channel one of the amplifier is described.

Signal is presented to the CE-Series through one of three connectors when using the standard input module. Each channel is outfitted with a balanced XLR / phone jack, and a barrier strip. These connectors are wired in parallel, which allows daisy chaining when needed. The signal is then converted from balanced to unbalanced in the Balanced Input Stage where it also receives RFI protection. Signal then flows into the Variable Gain Stage where the front panel level controls are allowed to affect the gain.

Following this stage, the signal is put under the control of a full-time compressor circuit comprised of a symmetrical window detector, a buffer amplifier, and the gating op amp which uses several small components to set the compressor's attack and decay characteristics. The actual compressing is accomplished by an opto-isolator which affects the gain in the signal path.

The signal next enters the main amplifier error amp where it is mixed with a small portion of the output signal in such a way as to control the amplifier's overall output performance. ***Warning:*** Details of closed loop amplifier design are beyond the scope of this description and if discussed, would surely put most readers to sleep!

Following the error amp is the LVA stage, which is where the low-voltage referenced signal gets translated to the output high-voltage rails. The last voltage amplifier, in conjunction with a bootstrap current source, drives both predrivers and the bias servo. The bias servo is mounted in such a way as to translate the output heatsink temperature into a controlled bias current to prevent thermal runaway and hold the amplifier's notch distortion to a minimum.

The predrivers provide enough signal to activate the drivers, which together operate in the class AB range. For the major output current requirements, the drivers feed the various numbers of paralleled output transistors which operate in a class B mode. This we call the Triple-Deep Darlington Output Stages.

The output transistors are protected by the Time Dependent Voltage & Current circuit. This circuit protects the devices from extending beyond their safe area of operation, but allows the devices to provide high bursts of peak power with music, allowing your amplifier to deliver more punch. When all is said and done, this amplifier output topology offers a good combination of low quiescent amplifier heating, great distortion performance at high powers, and relative simplicity, with impressive reliability and value.

All output power is delivered through 4-circuit Speakon® connectors. These connectors have been wired in such a way as to allow you the most versatility. The Channel 1 and 2 connectors are cross wired so you can cover all options, from dual cable stereo (typical), to Bridge-Mono in one connector, to running a bi-amp speaker with one amplifier and one cable per speaker cabinet!

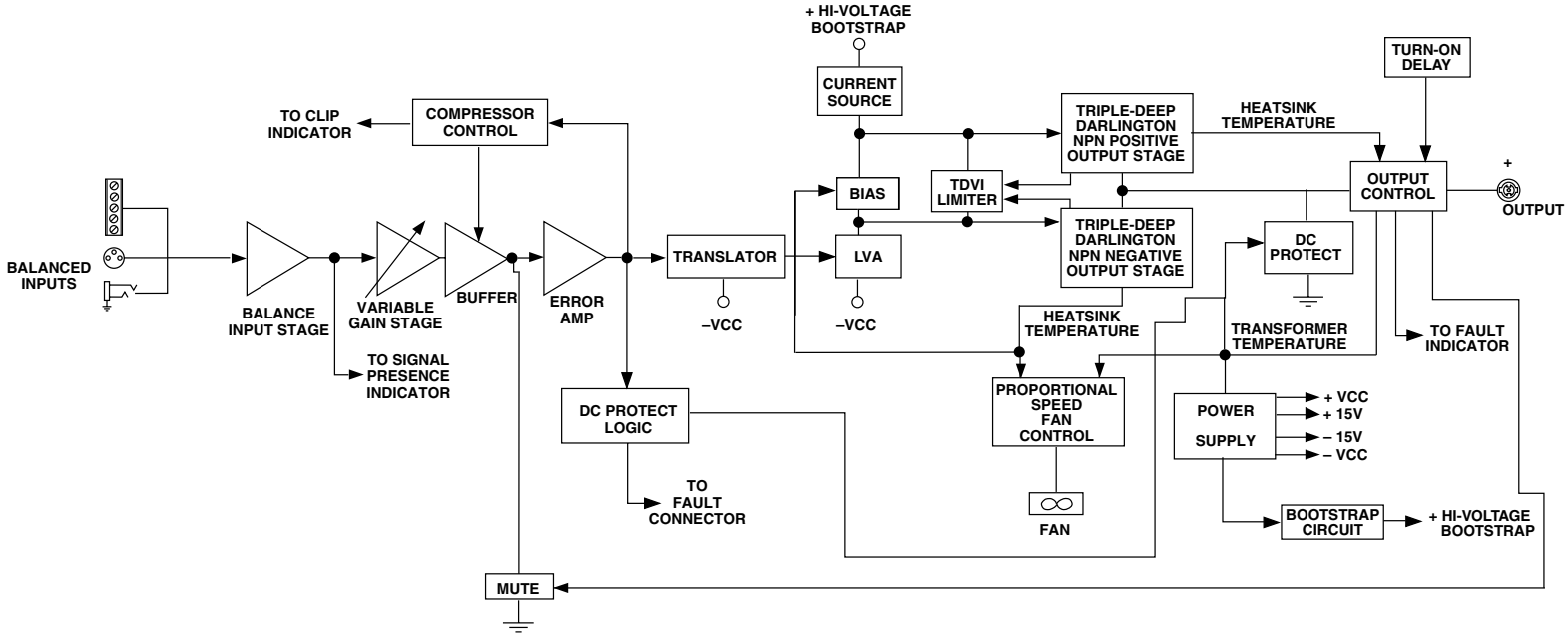
The output relay, in conjunction with input signal mute circuit, assures the amplifier will be well-behaved during turn on and off. In the event of an amplifier output failure, a triac will activate to turn off the offending channel and protect your speakers.

The turn on delay circuit functions to keep the output relay open until all the voltages are up and stable, both in the amplifier, and in all the components in the system ahead of the amplifier.

Heatsink temperature is monitored by a thermal probe attached to the heatsink. As the temperature rises, the probe sends a proportional current to the proportional speed fan circuit which starts the fan. Should the power transformer reach its maximum safe temperature, an internal thermal switch opens and the fan circuit turns on full speed to quickly cool down the amplifier. It also disconnects the load via the output relay, removing any output current and further speeding a cool-down cycle. Extra care was taken during the design stage to set this point both to protect your investment and to guard against nuisance tripping.

Whenever the heatsinks or the transformer reach a maximum temperature, or during the normal turn on delay window, the front panel Fault LEDs will blink to get your attention.

Fig. 6.1 CE-Series Amplifier Block Diagram (Shown with Standard Input Module)



A modular jack is mounted on the back panel (same type as used on telephones). Pins 2 and 5 are connected to an opto-isolator which is always in a low-resistance state whenever the unit is on and happy. Should a fault be detected or should the amplifier lose AC power, the opto-isolator will change to a high resistance, allowing the user to remotely detect the status of the amplifier.

The Signal Presence Indicators tap the signal chain just before the level controls and prior to the power amplifier chain. They are ***not*** amplifier output indicators and should only be used to indicate the presence of signal to the amplifier front end.

The Clip light is driven from the output of the compressor circuitry and lights to indicate the onset of audible distortion.

The Power LED is driven from the low-voltage supply.

A positive and negative regulator form the ±15-volt power supplies. Add to that the main transformer, a full-wave bridge rectifier, and high energy electrolytic to form the main power supply. They are protected by the front-panel line circuit breaker and controlled by the front-panel power switch.

And there my friends you have it, the guts of the CE-Series from Crown!

7 Specifications

Note: All measurements relate to 120-volt, 60-Hz units in Stereo mode with 8-ohm loads and an input sensitivity of 26-dB gain at 1-kHz rated power unless otherwise specified. Specifications for units supplied outside the U.S.A. may vary slightly at different AC voltages and frequencies.

Power

Output Power: (see Figure 7.1).

Load Impedance: Safe with all types of loads. Rated for 2, 4 and 8 ohms in Stereo mode, 4 and 8 ohms in Bridge-Mono mode.

Voltage Gain to 1-kHz, 8-ohm rated output,

CE1000:

30.5-dB gain at 1.4-volt sensitivity;
26-dB gain at 2.34-volt sensitivity.

CE2000:

32.1-dB gain at 1.4-volt sensitivity;
26-dB gain at 2.83-volt sensitivity.

Required AC Mains: 50/60 Hz (North American units are 60 Hz only); 100-, 120- and 230-/240-VAC (±10%) units are available.

AC Line Current;

CE 1000:

100 Volts: 7.6 A;
120 Volts: 6.3 A;
230-240 Volts: 3.5 A;

CE 2000:

100 Volts: 11.4 A;
120 Volts: 9.5 A;
230-240 Volts: 5.0 A;

At Idle: All amps draw no more than 90 watts.

AC Line Connector: NEMA 5-15P (15 A).

Performance

Frequency Response: ±0.2 dB from 20 Hz to 25 kHz at 1 watt (See Figure 7.2).

Phase Response: ±15 degrees from 20 Hz to 20 kHz at 1 watt.

Signal to Noise Ratio,

A-Weighted:

Better than 105 dB below rated 1-kHz power;

20 Hz to 20 kHz:

Better than 100 dB below rated 1-kHz power.

Total Harmonic Distortion (THD): 0.5% or less true THD from 20 Hz to 20 kHz.

Intermodulation Distortion (IMD): (60 Hz and 7 kHz at 4:1) Less than 0.1% at rated power to 35 dB below rated power at 8 ohms.

Damping Factor: Better than 400 from 10 Hz to 400 Hz.

Crosstalk: Better than 55 dB below rated power, 20 Hz to 20 kHz.

Common Mode Rejection (CMR): Better than 70 dB from 20 Hz to 1 kHz.

DC Output Offset (Shorted Input): ±10 mV.

Controls and Connectors

Level: A detented rotary level control for each channel located on the front panel.

Power: An on/off rocker switch located on the front panel.

Mode: A two-position switch located on the back panel below the input connectors which, when turned to stereo, operates the amplifier as two independent channels. When "Bridge-Mono" mode is selected, the amplifier bridges the two output channels for twice the output voltage.

Reset: A front-panel push button used to reset the circuit breaker that protects the power supply.

Sensitivity: A two-position switch located on the back panel next to the Mode switch. Switchable between 1.4 volts for full output into an 8-ohm load (default setting), or a fixed voltage gain of 26 dB. 0.775-volt sensitivity available as a Service Option.

Fault Jack: A back-panel RJ-11 jack that may be remotely monitored to signal amplifier Fault condition. An LED or other signalling device (not supplied) may be used.

Indicators

(All Located on the Front Panel)

Signal: A green LED for each channel which flashes when a very low-level signal (>–40 dBm) is present at input. May be used for troubleshooting cable runs.

Clip: A red LED for each channel which turns on when distortion becomes audible in the amplifier output.

Fault: Normally off, this red indicator will blink under five different conditions:

1. When the amplifier is first powered up, until the unit is ready for operation.
2. If the heatsinks reach a temperature above normal working limits.
3. If the transformer thermal protection circuit is activated.
4. If amplifier output wires develop a short-circuit.
5. Should the amplifier output stage become non-operational.

This circuit may be monitored remotely by plugging a simple switching circuit using an LED or other signaling device into the back-panel RJ-11 (Fault) jack. Under some conditions, the output of the amplifier will be muted.

Power: A green LED that turns on when the amplifier has been turned on and has power.

Input/Output

Input Connector (standard module): One Neutrik® Combo connector for each channel which features a balanced ¼-inch (6.35-mm) phone jack and a 3-pin female XLR connector, in parallel with a barrier strip termination.

Input Stage: Input is electronically balanced and employs precision 1% resistors.

Input Impedance: Nominally 20 k ohms, balanced. Nominally 10 k ohms, unbalanced.

Input Sensitivity: 1.4 volts for standard 1-kHz power, or fixed 26-dB gain. 0.775-volt sensitivity available as a Service Option.

Output Connectors: Two Neutrik® Speakon® NL4MP (mates with NL4FC) output connectors. Optional 5-way binding post or barrier strip outputs (in parallel with Speakon® connectors) are available as a Service Option.

DC Output Offset: ±10 millivolts.

Output Signal,

Stereo:

Unbalanced, two-channel;

Bridge-Mono:
Balanced, single-channel. Channel 1 controls are active; Channel 2 should be turned down.

Wiring Configuration: (see Figure: 7.3).

Protection

CE-Series amplifiers are protected against shorted, open or mismatched loads; overloaded power supplies; excessive temperature; chain destruction phenomena; input overload damage; and high-frequency blowups. They also protect loudspeakers from input/output DC, large or dangerous DC offsets and turn-on/turn-off transients.

Options

Accessories: CE-HANDLES—handle kit; CE-S1—Speakon to barrier output adapter;* CE-S2—Speakon to 5-way binding post adapter.*

Service Options: SST-SBSC—variable Linkwitz-Riley stereo crossover with mono-summed sub-bass outputs; SST-MX—100-Hz Linkwitz-Riley crossover with stereo sub-bass outputs; SST-SX—80-/120-Hz switchable Linkwitz-Riley crossover with mono summed sub-bass output; CE-AS1—barrier block alternate output connectors;** CEAS1—5-way binding post alternate output connectors.**

Construction

Rugged steel chassis is formed into a durable package any stagehand could love. Coated with environmentally friendly powder for long life and ease of maintenance.

Cooling: Proportional speed fan.

Dimensions: EIA Standard 19-inch rack mount width (EIA RS-310-B), 5.25-inch (13.34-cm) height and 12.25-inch (31.11-cm) depth behind front mounting surface.

Weight: The CE 1000 weighs 32.6 pounds (14.79 kg). The CE 2000 weighs 40.3 pounds (18.28 kg). For shipping weight, add 6 pounds (2.7 kg) to each amp.

*Compatible with CE versions CE 1000 and CE 2000 amplifiers (initial release).

**Compatible with CE versions CE 1000A and CE 2000A amplifiers (current release).

CE 1000	*1 kHz Power
2-ohm Stereo (per channel)	560W
4-ohm Stereo (per channel)	450W
8-ohm Stereo (per channel)	275W
4-ohm Bridge-Mono	1,100W
8-ohm Bridge-Mono	900W

*1 kHz Power: refers to maximum average power in watts at 1 kHz with 0.5% THD.

CE 2000	*1 kHz Power
2-ohm Stereo (per channel)	975W
4-ohm Stereo (per channel)	660W
8-ohm Stereo (per channel)	400W
4-ohm Bridge-Mono	1,950W
8-ohm Bridge-Mono	1,320W

*1 kHz Power: refers to maximum average power in watts at 1 kHz with 0.5% THD.

Fig.7.1 CE 1000 and CE 2000 Output Power

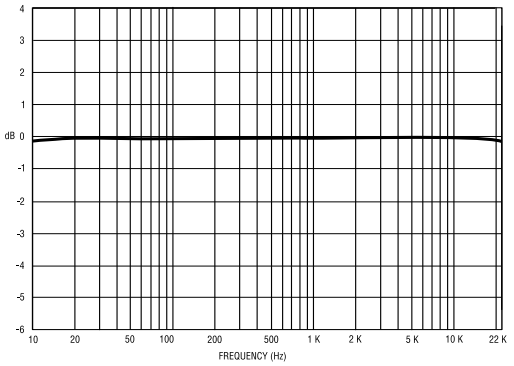


Fig. 7.2 Awesome Frequency (Amplitude) Response

OUTPUT ASSIGNMENT			
PIN	CH	PIN	CH
1+	2	1+	1
1-	2	1-	1
2+		2+	2
2-		2-	2
CH-2		CH-1	

Fig. 7.3 Output Pin Assignments

8 Service

Your amplifier should only be serviced by a fully trained technician at an authorized service center.

CAUTION: To prevent electric shock, do not remove covers. No user serviceable parts inside. Refer servicing to a qualified technician.

Worldwide Service

Service may be obtained from an authorized service center. (Contact your local Crown/Amcron representative or our office for a list of authorized service centers.) To obtain service, simply present the bill of sale as proof of purchase along with the defective unit to an authorized service center. They will handle the necessary paperwork and repair.

Remember to transport your unit in the original factory packing!

North American Service

Service may be obtained in one of two ways: from an authorized service center or from the factory. You may choose either. It is important that you have your copy of the bill of sale as your proof of purchase.

Service at a North American Service Center

This method usually saves the most time and effort. Simply present your bill of sale along with the defective unit to an authorized service center to obtain service. They will handle the necessary paperwork and repair. Remember to transport the unit in the original factory packing. A list of authorized service centers in your area can be obtained from our Technical Support Group.

Factory Service

To obtain factory service, fill out the **service information page** found in the back of this manual and send it along with your proof of purchase and the defective unit to the Crown factory.

For warranty service, we will pay for ground shipping both ways in the United States. Contact Crown Factory Service or Technical Support to obtain prepaid shipping labels prior to sending the unit. Or, if you prefer, you may prepay the cost of shipping, and Crown will reimburse you.

Send copies of the shipping receipts to Crown to receive reimbursement.

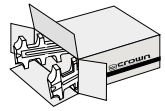
Your repaired unit will be returned via UPS ground. Please contact us if other arrangements are required.

Factory Service Shipping Instructions:

1 When sending a Crown product to the factory for service, be sure to fill out the service information form found in the back of this manual and enclose it inside your unit's shipping pack. Do not send the service information form separately.

2 To ensure the safe transportation of your unit to the factory, ship it in an original factory packing container. If you don't have one, call or write Crown's Parts Department. **Do not use loose, small size packing materials.**

3 Do not ship the unit in any kind of cabinet or rack (wood or metal). Ignoring this warning may result in extensive damage to the unit and the cabinet. Accessories are not needed—do not send cables and other hardware. Do not send this instruction manual, if we forget what we said, we have duplicates!



Always use the original factory packing to transport the unit.

If you have any questions, please call or write the Crown Technical Support Group.

Crown Customer Service

Technical Support / Factory Service
Plant 2 SW, 1718 W. Mishawaka Rd., Elkhart, Indiana 46517 U.S.A.

Telephone:	219-294-8200 800-342-6939 (North America, Puerto Rico, and Virgin Islands only)
Facsimile:	219-294-8301 (Technical Support) 219-294-8124 (Factory Service)
Internet:	http://www.crownaudio.com

NORTH AMERICA

THREE YEAR
FULL WARRANTY

SUMMARY OF WARRANTY

The Crown Audio Division of Crown International, Inc., 1718 West Mishawaka Road, Elkhart, Indiana 46517-4095 U.S.A. warrants to you, the ORIGINAL PURCHASER and ANY SUBSEQUENT OWNER of each NEW Crown product, for a period of three (3) years from the date of purchase by the original purchaser (the "warranty period") that the new Crown product is free of defects in materials and workmanship. We further warrant the new Crown product regardless of the reason for failure, except as excluded in this Warranty.

ITEMS EXCLUDED FROM THIS CROWN WARRANTY

This Crown Warranty is in effect only for failure of a new Crown product which occurred within the Warranty Period. It does not cover any product which has been damaged because of any intentional misuse, accident, negligence, or loss which is covered under any of your insurance contracts. This Crown Warranty also does not extend to the new Crown product if the serial number has been defaced, altered, or removed.

WHAT THE WARRANTOR WILL DO

We will remedy any defect, regardless of the reason for failure (except as excluded), by repair, replacement, or refund. We may not elect refund unless you agree, or unless we are unable to provide replacement, and repair is not practical or cannot be timely made. If a refund is elected, then you must make the defective or malfunctioning product available to us free and clear of all liens or other encumbrances. The refund will be equal to the actual purchase price, not including interest, insurance, closing costs, and other finance charges less a reasonable depreciation on the product from the date of original purchase. Warranty work can only be performed at our authorized service centers or at the factory. We will remedy the defect and ship the product from the service center or our factory within a reasonable time after receipt of the defective product at our authorized service center or our factory. All expenses in remedying the defect, including surface shipping costs in the United States, will be borne by us. (You must bear the expense of shipping the product between any foreign country and the port of entry in the United States and all taxes, duties, and other customs fees for such foreign shipments.)

HOW TO OBTAIN WARRANTY SERVICE

You must notify us of your need for warranty service not later than ninety (90) days after expiration of the warranty period. All components must be shipped in a factory pack, which, if needed, may be obtained from us free of charge. Corrective action will be taken within a reasonable time of the date of receipt of the defective product by us or our authorized service center. If the repairs made by us or our authorized service center are not satisfactory, notify us or our authorized service center immediately.

DISCLAIMER OF CONSEQUENTIAL & INCIDENTAL DAMAGES

YOU ARE NOT ENTITLED TO RECOVER FROM US ANY INCIDENTAL DAMAGES RESULTING FROM ANY DEFECT IN THE NEW CROWN PRODUCT. THIS INCLUDES ANY DAMAGE TO ANOTHER PRODUCT OR PRODUCTS RESULTING FROM SUCH A DEFECT. **SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.**

WARRANTY ALTERATIONS

No person has the authority to enlarge, amend, or modify this Crown Warranty. This Crown Warranty is not extended by the length of time which you are deprived of the use of the new Crown product. Repairs and replacement parts provided under the terms of this Crown Warranty shall carry only the unexpired portion of this Crown Warranty.

DESIGN CHANGES

We reserve the right to change the design of any product from time to time without notice and with no obligation to make corresponding changes in products previously manufactured.

LEGAL REMEDIES OF PURCHASER

THIS CROWN WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE. No action to enforce this Crown Warranty shall be commenced later than ninety (90) days after expiration of the warranty period.

THIS STATEMENT OF WARRANTY SUPERSEDES ANY OTHERS CONTAINED IN THIS MANUAL FOR CROWN PRODUCTS.

9/90 Telephone: 219-294-8200. Facsimile: 219-294-8301

WORLDWIDE

THREE YEAR
FULL WARRANTY

SUMMARY OF WARRANTY

The Crown Audio Division of Crown International, Inc., 1718 West Mishawaka Road, Elkhart, Indiana 46517-4095 U.S.A. warrants to you, the ORIGINAL PURCHASER and ANY SUBSEQUENT OWNER of each NEW Crown[1] product, for a period of three (3) years from the date of purchase by the original purchaser (the "warranty period") that the new Crown product is free of defects in materials and workmanship, and we further warrant the new Crown product regardless of the reason for failure, except as excluded in this Crown Warranty.

[1] *Note: If your unit bears the name "Amcron," please substitute it for the name "Crown" in this warranty.*

ITEMS EXCLUDED FROM THIS CROWN WARRANTY

This Crown Warranty is in effect only for failure of a new Crown product which occurred within the Warranty Period. It does not cover any product which has been damaged because of any intentional misuse, accident, negligence, or loss which is covered under any of your insurance contracts. This Crown Warranty also does not extend to the new Crown product if the serial number has been defaced, altered, or removed.

WHAT THE WARRANTOR WILL DO

We will remedy any defect, regardless of the reason for failure (except as excluded), by repair, replacement, or refund. We may not elect refund unless you agree, or unless we are unable to provide replacement, and repair is not practical or cannot be timely made. If a refund is elected, then you must make the defective or malfunctioning product available to us free and clear of all liens or other encumbrances. The refund will be equal to the actual purchase price, not including interest, insurance, closing costs, and other finance charges less a reasonable depreciation on the product from the date of original purchase. Warranty work can only be performed at our authorized service centers. We will remedy the defect and ship the product from the service center within a reasonable time after receipt of the defective product at our authorized service center.

HOW TO OBTAIN WARRANTY SERVICE

You must notify us of your need for warranty service not later than ninety (90) days after expiration of the warranty period. All components must be shipped in a factory pack. Corrective action will be taken within a reasonable time of the date of receipt of the defective product by our authorized service center. If the repairs made by our authorized service center are not satisfactory, notify our authorized service center immediately.

DISCLAIMER OF CONSEQUENTIAL & INCIDENTAL DAMAGES

YOU ARE NOT ENTITLED TO RECOVER FROM US ANY INCIDENTAL DAMAGES RESULTING FROM ANY DEFECT IN THE NEW CROWN PRODUCT. THIS INCLUDES ANY DAMAGE TO ANOTHER PRODUCT OR PRODUCTS RESULTING FROM SUCH A DEFECT.

WARRANTY ALTERATIONS

No person has the authority to enlarge, amend, or modify this Crown Warranty. This Crown Warranty is not extended by the length of time which you are deprived of the use of the new Crown product. Repairs and replacement parts provided under the terms of this Crown Warranty shall carry only the unexpired portion of this Crown Warranty.

DESIGN CHANGES

We reserve the right to change the design of any product from time to time without notice and with no obligation to make corresponding changes in products previously manufactured.

LEGAL REMEDIES OF PURCHASER

No action to enforce this Crown Warranty shall be commenced later than ninety (90) days after expiration of the warranty period.

THIS STATEMENT OF WARRANTY SUPERSEDES ANY OTHERS CONTAINED IN THIS MANUAL FOR CROWN PRODUCTS.

Telephone: 219-294-8200. Facsimile: 219-294-8301 9/90

Crown Factory Service Information

Shipping Address: Crown Audio, Inc., Factory Service,
Plant 2 SW, 1718 W. Mishawaka Rd., Elkhart, IN U.S.A. 46517
Phone: 1-800-342-6939 or 1-219-294-8200 Fax: 1-219-294-8124

Owner's Name: _____

Shipping Address: _____

Phone Number: _____ **Fax Number:** _____

Model: _____ **Serial Number:** _____

Purchase Date: _____

NATURE OF PROBLEM

(Be sure to describe the conditions that existed when the problem occurred and what attempts were made to correct it.)

_____

_____

_____

_____

_____

Other equipment in your system: _____

_____

_____

_____

_____

If warranty has expired, payment will be:

❑ **Cash/Check** ❑ **VISA** ❑ **MasterCard** ❑ **C.O.D.**

Card Number: _____

Exp. Date: _____ **Signature:** _____

ENCLOSE THIS PORTION WITH THE UNIT.
DO NOT MAIL SEPARATELY.