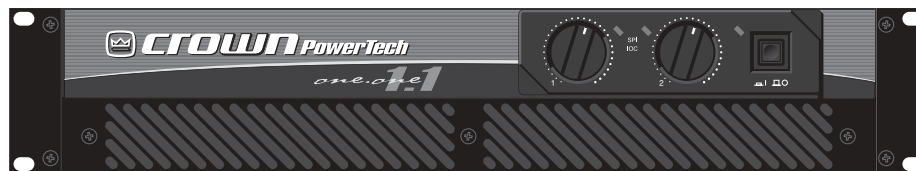


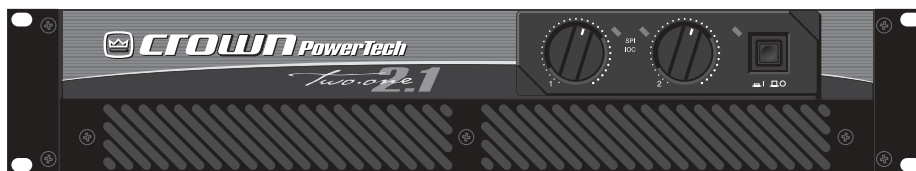


Power-Tech .1 Series

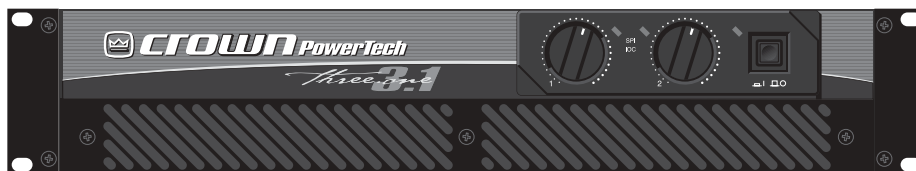
Operation Manual



Power-Tech 1.1



Power-Tech 2.1



Power-Tech 3.1

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 574-294-8000.

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.

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.

Trademark Notice: Crown, Amcron and ODEP are registered trademarks of Crown International. Grounded Bridge is a trademark of Crown International. Other trademarks are the property of their respective owners.

Some models may be exported under the name Amcron.®

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.



TO PREVENT ELECTRIC SHOCK DO NOT REMOVE TOP OR BOTTOM COVERS. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

À PRÉVENIR LE CHOC ÉLECTRIQUE N'ENLEVEZ PAS LES COUVERCLES. IL N'Y A PAS DES PARTIES SERVICEABLE À L'INTÉRIEUR. TOUS REPARATIONS DOIT ÊTRE FAIRE PAR PERSONNEL QUALIFIÉ SEULMENT.



AVIS
RISQUE DE CHOC ÉLECTRIQUE
N'OUVREZ PAS

IMPORTANT

Power-Tech .1 Series amplifiers require Class 2 output wiring.



MAGNETIC 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 unshielded devices that are located nearby. The field is 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 other 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.

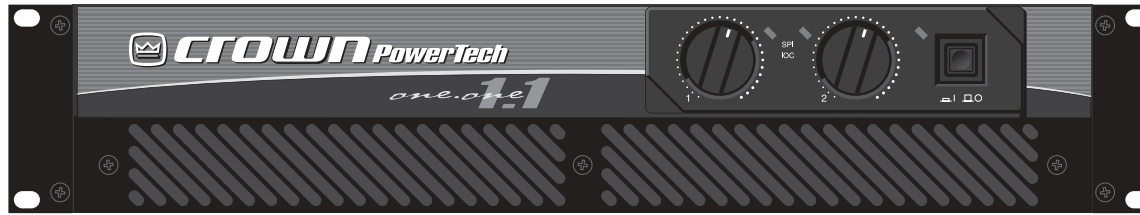


The exclamation point triangle is used to alert the user to important operating or maintenance instructions.



Table of Contents

| | | | |
|---|----|---|----|
| Important Safety Instructions | 2 | 5 Advanced Features and Options | 13 |
| Table of Contents | 3 | 5.1 Protection Systems | 13 |
| 1 Welcome | 4 | 5.1.1. ODEP | 13 |
| 1.1 Features..... | 4 | 5.1.2 Ultrasonic and Radio Frequency Protection | 13 |
| 2 How to Use This Manual | 4 | 5.1.3 Drive Protection | 13 |
| 3 Setup..... | 5 | 5.1.4 Transformer Thermal Protection..... | 13 |
| 3.1 Unpack Your Amplifier | 5 | 5.1.5 Fuses and Circuit Breakers..... | 13 |
| 3.2 Install Your Amplifier | 5 | 5.2 Option | 14 |
| 3.3 Ensure Proper Cooling | 5 | 5.2.1 MT-BB..... | 14 |
| 3.4 Choose Input Wire and Connectors | 6 | 6 Troubleshooting | 15 |
| 3.5 Choose Output Wire and Connectors | 7 | 7 Specifications | 16 |
| 3.6 Wire Your System | 8 | 8 Service | 17 |
| 3.6.1 Stereo Mode..... | 8 | 8.1 Worldwide Service | 18 |
| 3.6.2 Bridge-Mono Mode..... | 8 | 8.2 US and Canada Service | 18 |
| 3.6.3 Parallel-Mono Mode..... | 8 | 8.2.1 Service at a US or Canada Service Center | 18 |
| 3.7 Set Input Sensitivity | 9 | 8.2.2 Factory Service | 18 |
| 3.8 Connect to AC Mains | 9 | 8.2.3 Factory Service Shipping Instructions..... | 18 |
| 3.9 Startup Procedure | 9 | 9 Warranty | 19 |
| 4 Operation | 9 | Factory Service Information Form | 21 |
| 4.1 Precautions | 9 | | |
| 4.2 Front Panel Controls and Indicators | 10 | | |
| 4.3 Back Panel Controls and Connectors..... | 11 | | |



| PT 1.1 | *1 kHz Power | **20 Hz–20 kHz Power |
|----------------------|-----------------|-------------------------|
| 4-ohm Dual (per ch.) | 305W | 275W |
| 8-ohm Dual (per ch.) | 220W | 210W |
| 8-ohm Bridge-Mono | 605W | 550W |

*1 kHz Power: refers to maximum average power in watts at 1 kHz with 0.1% THD.
 **20 Hz–20 kHz Power: refers to maximum average power in watts from 20 Hz to 20 kHz with 0.1% THD.

| PT 2.1 | *1 kHz Power | **20 Hz–20 kHz Power |
|----------------------|-----------------|-------------------------|
| 4-ohm Dual (per ch.) | 460W | 425W |
| 8-ohm Dual (per ch.) | 325W | 310W |
| 8-ohm Bridge-Mono | 910W | 830W |

*1 kHz Power: refers to maximum average power in watts at 1 kHz with 0.1% THD.
 **20 Hz–20 kHz Power: refers to maximum average power in watts from 20 Hz to 20 kHz with 0.1% THD.

| PT 3.1 | *1 kHz Power | **20 Hz–20 kHz Power |
|----------------------|-----------------|-------------------------|
| 4-ohm Dual (per ch.) | 760W | 715W |
| 8-ohm Dual (per ch.) | 540W | 525W |
| 8-ohm Bridge-Mono | 1,525W | 1,430W |

*1 kHz Power: refers to maximum average power in watts at 1 kHz with 0.1% THD.
 **20 Hz–20 kHz Power: refers to maximum average power in watts from 20 Hz to 20 kHz with 0.1% THD.

1 Welcome

Congratulations on purchasing a *Crown Power-Tech™.1 Series* amplifier. Power-Tech .1 Series amplifiers are compact, professional power amplifiers engineered to meet the most demanding sound reinforcement needs. They compare very favorably to more expensive amplifiers, providing uncolored sound and signal-to-noise ratios commonly associated with recording studios.

Modern power amplifiers are sophisticated pieces of engineering capable of producing extremely high power levels. They must be treated with respect and correctly installed if they are to provide the many years of reliable service for which they were designed.

In addition, the Power-Tech .1 Series amplifiers include a number of features which require some explanation before they can be used to their maximum advantage.

Please take the time to study this manual so that you can obtain the best possible service from your amplifier.

1.1 Features

- The patented *ODEP®* circuitry and *Grounded Bridge™* design combine to provide performance and reliability that surpass all traditional designs.

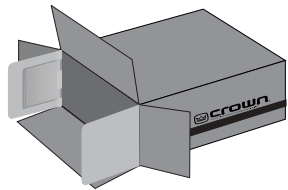
- Safe with any load. Bridge-Mono and Parallel-Mono modes make it easy to optimize the amplifier's performance for a wide range of loads.
- Complete protection against shorted outputs, mismatched loads, overheating, input/output DC and high-frequency overload; full internal fault protection.
- Balanced phone jack inputs in parallel with XLR input connectors. Barrier block input connectors are optional.
- Backed by the industry's ONLY three-year, no-fault, fully transferable and extendable warranty.

2 How to Use This Manual

This manual provides you with the necessary information to safely and correctly set up and operate your amplifier. It does not cover every aspect of installation, setup or operation that might occur under every condition. For additional information, please consult Crown's *Amplifier Application Guide* (available online at www.crownaudio.com), Crown Technical Support, your system installer or retailer.

We strongly recommend you read all instructions, warnings and cautions contained in this manual. Also, for your protection, please send in your warranty registration card today. And save your bill of sale—it's your official proof of purchase.

3 Setup



3.1 Unpack Your Amplifier

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. 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.**

YOU WILL NEED (not supplied):

- Input wiring cables
- Output wiring cables

Rack for mounting amplifier (or a stable surface for stacking)



WARNING: Before you start to set up your amplifier, make sure you read and observe the Important Safety Instructions found at the beginning of this manual.

3.2 Install Your Amplifier



CAUTION: Before you begin, make sure your amplifier is disconnected from the power source, with power switch in the "off" position and all level controls turned completely down (counterclockwise).

Use a standard 19-inch (48.3-cm) equipment rack. See Figure 3.1 for amplifier dimensions.

You may also stack amps without using a cabinet.

NOTE: When transporting, amplifiers should be supported at both front and back.

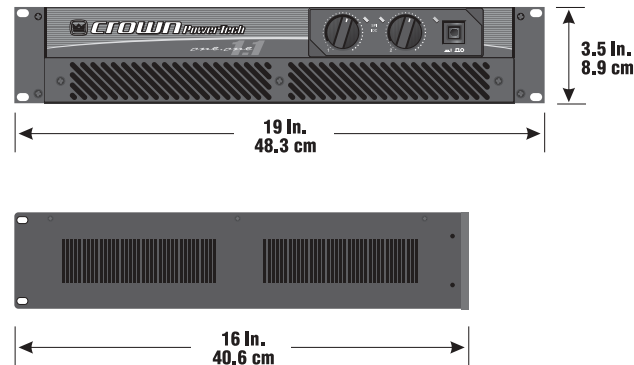


Figure 3.1 Dimensions

3.3 Ensure Proper Cooling

When using an equipment rack, mount units directly on top of each other. Close any open spaces in rack with blank panels. DO NOT block front or rear air vents. The side walls of the rack should be a minimum of 2 inches (5.1 cm) away from the amplifier sides, and the back of the rack should be a minimum of 4 inches (10.2 cm) from the amplifier back panel.

Figure 3.2 illustrates standard amplifier airflow.

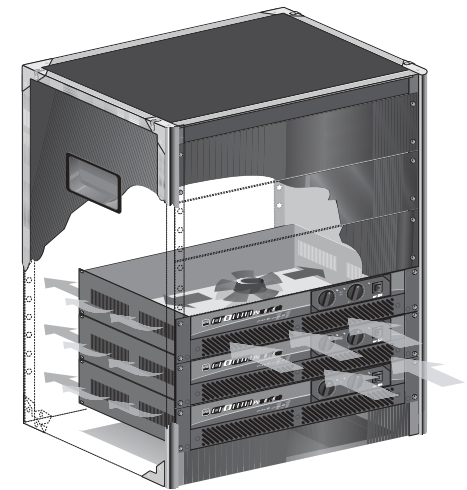


Figure 3.2 Airflow

3 Setup

3.4 Choose Input Wire and Connectors

Crown recommends using pre-built or professionally wired, balanced line (two-conductor plus shield), 22-24 gauge cables and connectors. If you chose the MT-BB input barrier strip option, use bare wire or spade lugs at the amplifier inputs. Otherwise use either 3-pin male XLR connectors or TRS 1/4-inch phone connectors.

Figure 3.3 shows connector pin assignments for balanced wiring, and Figure 3.4 shows connector pin assignments for unbalanced wiring.

NOTE: Custom wiring should only be performed by qualified personnel.

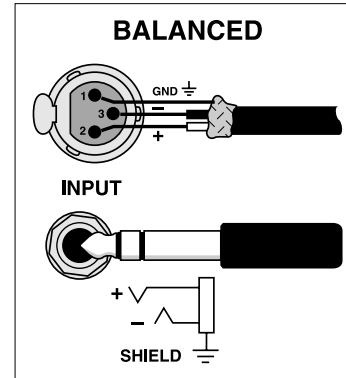


Figure 3.3 Balanced Input Connector Wiring

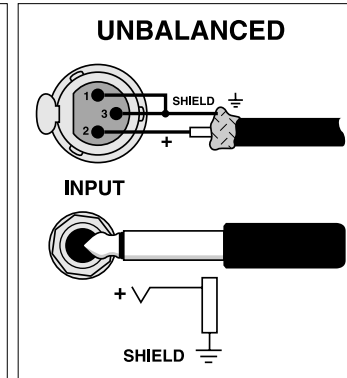


Figure 3.4 Unbalanced Input Connector Wiring

3 Setup

3.5 Choose Output Wire and Connectors

Crown recommends using pre-built or professionally wired, high-quality, two-conductor, heavy gauge speaker wire. Use bare wire, a dual banana plug or spade lugs on the amplifier end of each speaker cable (Figure 3.5). To prevent the possibility of short-circuits, wrap or otherwise insulate exposed loudspeaker cable connectors.

Using the guidelines below, select the appropriate size of wire based on the distance from amplifier to speaker.

| Distance | Wire Size |
|--------------|-----------|
| up to 25 ft. | 16 gauge |
| 26-40 ft. | 14 gauge |
| 41-60 ft. | 12 gauge |
| 61-100 ft. | 10 gauge |
| 101-150 ft. | 8 gauge |
| 151-250 ft. | 6 gauge |



CAUTION: Never use shielded cable for output wiring.

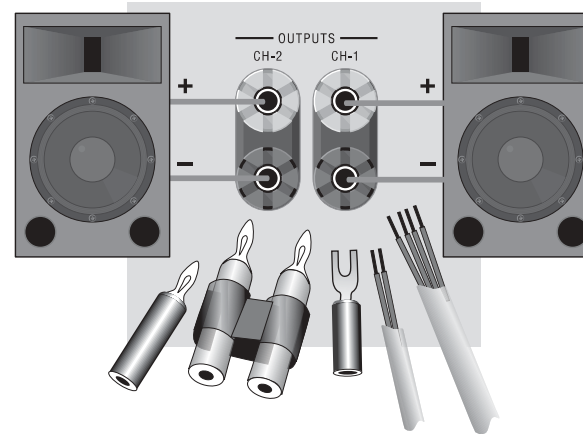


Figure 3.5 Output Connector Wiring

3 Setup

3.6 Wire Your System

Turn down the Level controls (fully counter-clockwise) and turn off the amplifier before wiring it as described below. Refer to Figure 3.6.

3.6.1 Stereo Mode

Set the back panel stereo/mono switch to Stereo.

INPUTS: Connect input wiring to both channels.

OUTPUTS: Maintain proper polarity (+/-) on output connectors.

Connect Channel 1 positive (+) speaker load to Channel 1 positive terminal of amp; repeat for negative (-). Repeat Channel 2 wiring as for Channel 1.

3.6.2 Bridge-Mono Mode

Set the back panel stereo/mono switch to Bridge-Mono.

INPUTS: Connect input wiring to Channel 1 only.

OUTPUTS: Connect the speaker across the positive terminals of each channel. Do not use the negative terminals when the amp is being operated in Bridge-Mono mode.

NOTE: The Channel 2 level control should be set fully counter-clockwise when operating the amplifier in Bridge-Mono mode.

3.6.3 Parallel-Mono Mode

CAUTION: Parallel-Mono wiring requires installation of a jumper wire. Do not switch to Stereo or Bridge-Mono mode until this output jumper wire is removed.

IMPORTANT: The Channel 2 IOC indicator will remain lit when operating in Parallel-Mono mode.

Set the back panel stereo/mono switch to Parallel-Mono.

INPUTS: Connect input wiring to Channel 1 only.

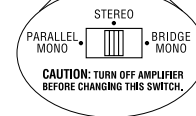
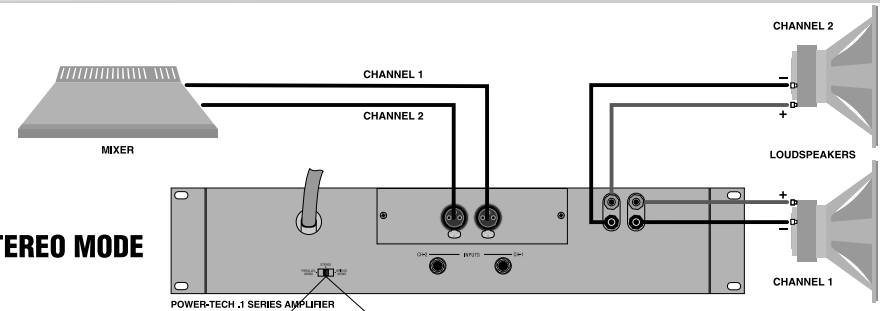
OUTPUTS: Add a 14 AWG gauge (or larger) jumper between the red(+) Channel 1 and Channel 2 binding posts. Connect the speaker positive (+) lead to the Channel 1 red (+) terminal. Connect the speaker negative (-) lead to the Channel 1 black (-) terminal.

NOTE: Use only the Channel 1 level control.

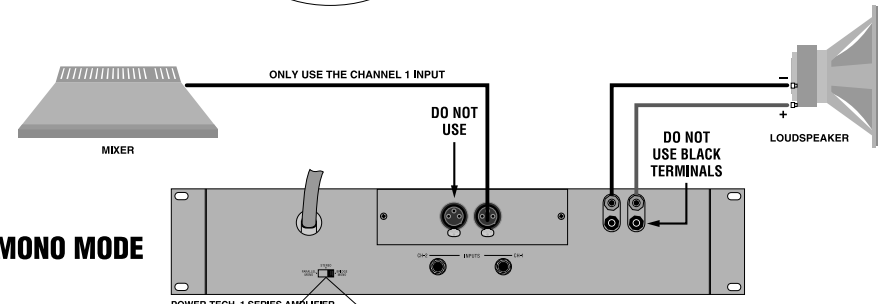
NOTE: Crown provides a reference of wiring pin assignments for commonly used connector types in the Crown *Amplifier Application Guide*, available online at www.crownaudio.com.



STEREO MODE



BRIDGE-MONO MODE



IMPORTANT: WHEN USING BRIDGE-MONO MODE, TURN THE FRONT PANEL LEVEL CONTROL FOR CHANNEL 2 FULLY COUNTERCLOCKWISE (OFF).

PARALLEL-MONO MODE

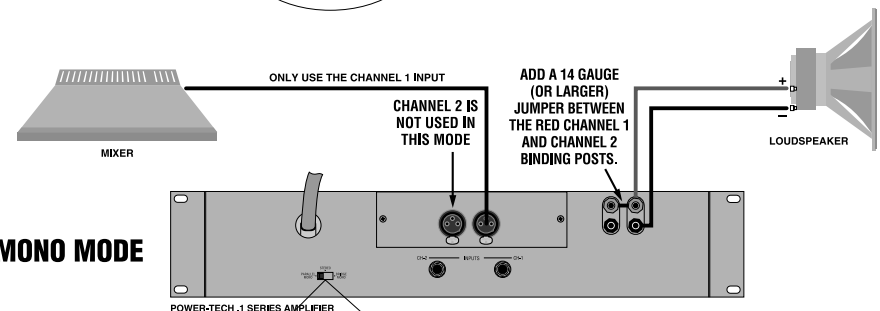


Figure 3.6 Three System Connection Methods

3 Setup

3.7 Set Input Sensitivity

The input sensitivity switch inside the amplifier is set to 0.775 volt RMS at the factory. (Factory setting for international models is 1.4V). It can be changed to 1.4 volts or a voltage gain of 26 dB. The 26 dB gain setting is equivalent to a sensitivity of 2.1 volts for the Power-Tech 1.1, 2.6 volts for the Power-Tech 2.1 and 3.3 volts for the Power-Tech 3.1.

To change the input sensitivity:

1. Turn off and unplug the amplifier from the AC source.
2. Remove the input module on the back panel.
3. Locate the labeled access hole for the sensitivity switch (Figure 3.7). The sensitivity switch will not be visible because it is mounted below the hole. Use your little finger to reach it.
4. Set the switch to the desired position.
5. Replace the input module.

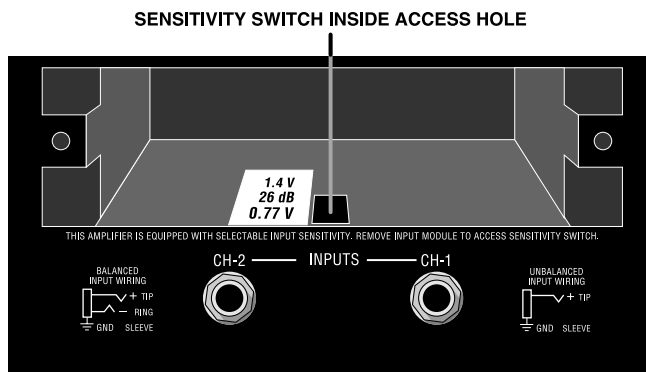


Figure 3.7 Input Sensitivity Switch

3.8 Connect to AC Mains

Connect your amplifier's power cord to the AC mains power source (power outlet).



WARNING: The third prong of this connector (ground) is an important safety feature. Do not attempt to disable this ground connection by using an adapter or other methods.

Amplifiers don't create energy. The AC mains voltage and current must be sufficient to deliver the power you expect. You must operate your amplifier from an AC mains power source with not more than 10% variation above or below the amplifier's specified line voltage and within the specified frequency requirements (indicated on the amplifier's back panel label). If you are unsure of the output voltage of your AC mains, please consult your electrician.

3.9 Startup Procedure

Use the following procedure when first turning on your amplifier:

1. Turn down the level of your audio source.
2. Turn down the Level controls of the amplifier.
3. Turn on the Power switch. The Enable indicator next to the Power switch should glow.
4. Turn up the level of your audio source to an optimum level.
5. Turn up the Level controls on the amplifier until the desired loudness or power level is achieved.
6. Turn down the level of your audio source to its normal range.

If you ever need to make any wiring or installation changes, **don't forget to disconnect the power cord.**

For help with determining your system's optimum gain structure (signal levels) please refer to the Crown *Amplifier Application Guide*, available online at www.crownaudio.com.

4 Operation

4.1 Precautions

Your amplifier is protected from internal and external faults, but you should still take the following precautions for optimum performance and safety:

1. Before use, configure your amplifier for proper operation as described in the Setup section of this manual. Improper wiring can result in serious operating difficulties. For advanced setup techniques, consult Crown's *Amplifier Application Guide* available online at www.crownaudio.com.
2. Use care when making connections, selecting signal sources and controlling the output level. The load you save may be your own!
3. Do not short the ground lead of an output cable to the input signal ground. This may form a ground loop and cause oscillations.
4. Never connect the output to a power supply, battery or power main. Electrical shock may result.
5. Tampering with the circuitry, or making unauthorized circuit changes may be hazardous and invalidates all agency listings.
6. Do not operate the amplifier with the IOC LED constantly flashing yellow.
7. Do not overdrive the mixer, which will cause clipped signal to be sent to the amplifier. Such signals will be reproduced with extreme accuracy, and loudspeaker damage may result.
8. Do not operate the amplifier with less than the rated load impedance. Due to the amplifier's output protection, such a configuration may result in premature clipping and speaker damage.

Crown is not liable for damage that results from overdriving other system components.

4 Operation

4.2 Front Panel Controls and Indicators

The diagram below explains the controls and indicators on the front panel of the Power-Tech .1 Series.

A. Level Controls

Continuously variable level controls for each channel.

B. SPI/IOC Indicator

Dual-function indicator for each channel flashes green for signal presence (SPI) and yellow if any distortion exceeds 0.05% (IOC).

C. Enable Indicator

Enable indicator shows the on/off status of the low-voltage supply.

D. Power Switch

Power switch (and circuit breaker for the Power-Tech 1.1, Power-Tech 2.1 and 220/240 VAC Power-Tech 3.1).

E. Ventilation Grille

Removable grille and dust filter.

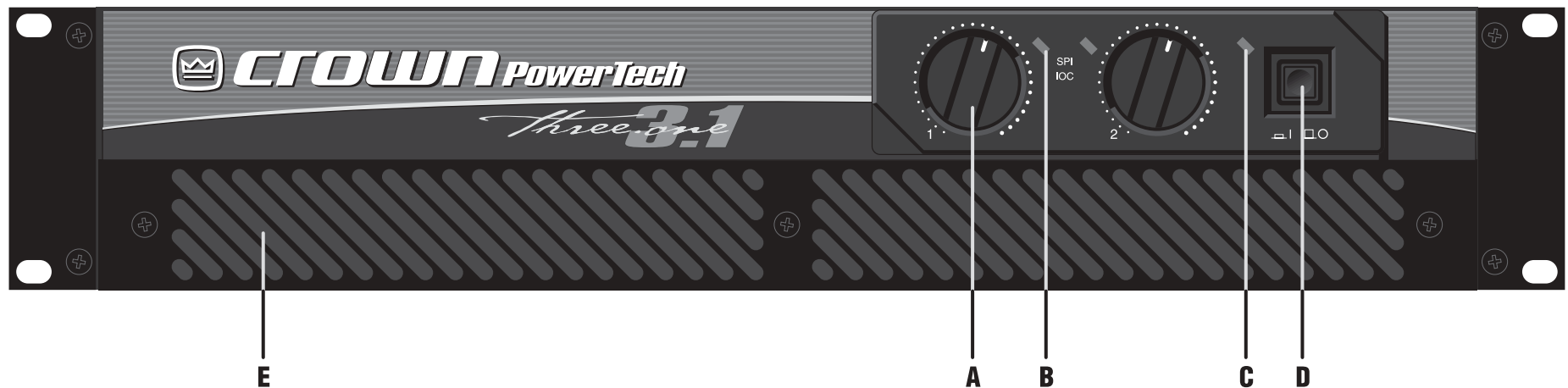


Figure 3.8 Power-Tech .1 Series Front Panel Controls and Indicators

4 Operation

4.3 Back Panel Controls and Connectors

The diagram below explains the controls and connectors on the back panel of the Power-Tech .1 Series.

F. Stereo/mono Switch

Stereo/mono switch for selecting Stereo, Bridge-Mono or Parallel-Mono modes.

G. Reset Switch

Circuit breaker reset switch (100/120 VAC Power-Tech 3.1 only)

H. Power Cord

I. XLR Input Connectors

Balanced XLR connectors for input.

J. 1/4-inch Input Connectors

1/4-inch balanced phone jacks for input.

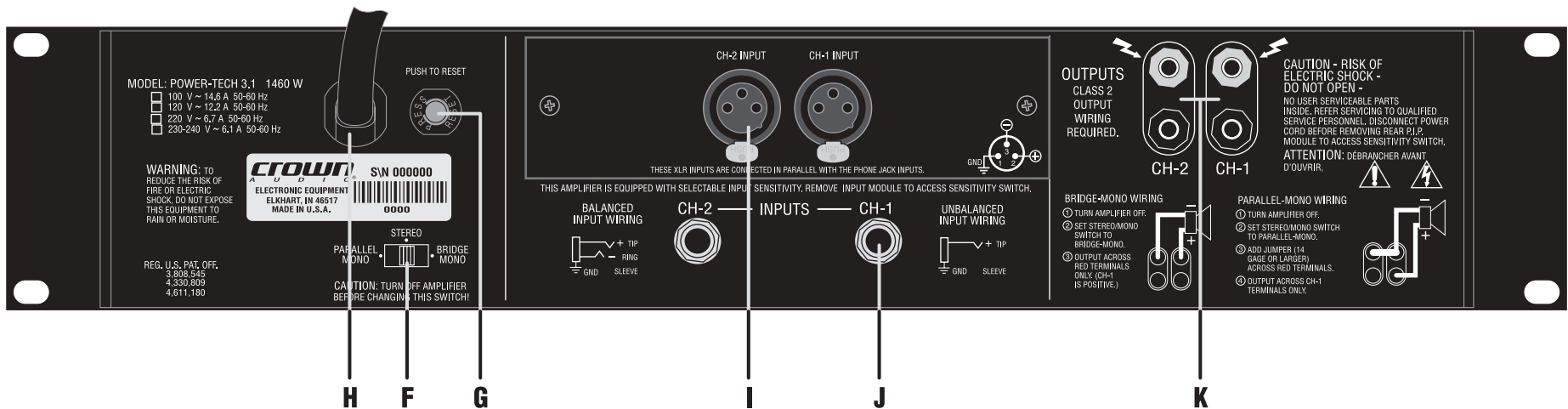


Figure 3.9 Power-Tech .1 Series Back Panel Controls and Connectors

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5 Advanced Features and Options

NOTE: For detailed information about these Crown amplifier features, please consult the *Crown Amplifier Application Guide*, available on the Crown website at www.crownaudio.com.

5.1 Protection Systems

Your Crown amplifier provides extensive protection systems, including ODEP, ultrasonic/RF protection, drive protection, transformer thermal protection and fuses or circuit breakers to protect the power supplies.

5.1.1 ODEP

Crown invented ODEP to prevent amplifier shutdown during demanding operation, and to increase the efficiency of the output circuitry.

To do this, Crown measured the safe operating area (SOA) of each output transistor before installing it in an amplifier. Next, Crown designed intelligent circuitry to simulate the instantaneous operating conditions of those output transistors. Its name describes what it does: Output Device Emulation Protection or ODEP. In addition to simulating output transistor operating conditions, it compares their operation to their known SOA. If ODEP sees that more power will be asked of the output devices than they can deliver, ODEP immediately limits the drive level until it falls within the SOA. Limiting is proportional and kept to an absolute minimum—only what is required to prevent output transistor damage. Under normal conditions, no limiting is required and ODEP is transparent to the audio signal.

5.1.2 Ultrasonic and Radio Frequency Protection

An amplifier's slew rate only needs to be large enough to deliver the maximum voltage at the highest required frequency. Higher slew rates actually let the amplifier reproduce undesirable frequencies. By design, Power-Tech .1 Series amplifiers have a controlled slew rate to put a frequency limit on the highest frequencies that they reproduce. This limit occurs well above 20 kHz, so there is no audible effect on performance. This approach protects the amplifier from radio frequencies and can even protect some sensitive loads (including some tweeters).

5.1.3 Drive Protection

This system temporarily removes output drive to protect the amplifier and its loads. Drive protection can be activated in two situations. First, if dangerous subsonic frequencies or direct current (DC) is detected in the amplifier's output, drive protection will activate. The amplifier resumes normal operation when it no longer detects dangerous output. Activating this protection is very unlikely, but improper source signals like infrasonic square waves or a severely clipped input signal can activate this system.

Second, the amplifier's fault protection system puts the affected channel into drive protection mode in rare situations where heavy common-mode current is detected in its output. The amplifier should never output heavy common-mode current unless its circuitry is damaged. Activating drive protection helps prevent further damage.

5.1.4 Transformer Thermal Protection

This activates in the rare case where the unit's transformer temperature rises to unsafe levels. Then the amplifier will remove power to the high-voltage transformer. The fan will continue to run in all units except those with 220/240 VAC transformers. The amplifier will return to normal after it cools to a safe temperature.

Your amplifier is designed to keep working under conditions where other amplifiers would fail. But even when you exceed the limits of a Power-Tech .1 Series amplifier, it still protects itself — and your investment — from damage.

5.1.5 Fuses and Circuit Breakers

Your amplifier's low-voltage power supply is protected by an internal fuse, and its high-voltage power supplies are protected by a circuit breaker. The circuit breaker is built into the power switch for all Power-Tech 1.1, Power-Tech 2.1 and 220/240 VAC Power-Tech 3.1 amplifiers. The circuit breaker is located on the back panel of 100/120 VAC Power-Tech 3.1 amplifiers.

With rated loads and output levels, the circuit breaker will shut down the amplifier only in the rare instance of a catastrophic amplifier failure. Other protection systems such as ODEP keep the amplifier operational under most other severe conditions. The breaker can also shut down the amplifier if extremely low-impedance loads and high output levels result in current draw that exceeds the breaker rating.

5 Advanced Features and Options

Again, this should be possible only when operating outside rated conditions, as when the amplifier is used to drive a 1-ohm load, or when driving a severely clipped signal.

A Power-Tech .1 Series amplifier will not blow its fuse or trip its breaker unless something is wrong. In the rare event that an internal fuse blows, please refer the unit to a qualified technician. If a breaker trips, try to identify and correct the problem before resetting the breaker. The breaker for the Power-Tech 1.1 and 2.1 can be reset using the front panel power switch. The circuit breaker for a Power-Tech 3.1 can be reset using the back panel reset switch. If the problem persists, refer the unit to an authorized Crown Service Center.

5.2 Option

5.2.1 MT-BB

The MT-BB is an accessory panel that provides barrier strip input connectors. An MT-BB accessory might be desirable in applications requiring bare wire or spade lug connections. Like other unused input connectors on your Power-Tech .1 Series amplifier, these barrier strip connectors can be used to daisy chain an input signal from one amplifier to another.

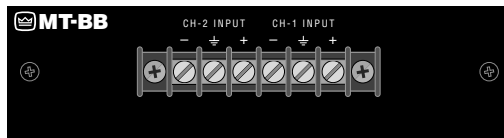


Fig. 5.1 MT-BB

Important: The MT-BB must be installed at a Crown Factory Service Center or the Crown factory.



6 Troubleshooting

CONDITION: No power to the amplifier.

POSSIBLE REASON:

- The amplifier's Power switch is off.
- The amplifier is not plugged into the power receptacle.
- The amplifier's low-voltage power supply fuse has blown. Return amp to Crown or an authorized Crown Service Center for servicing.

CONDITION: No sound.

POSSIBLE REASON:

- The amplifier has just been turned on and is still in the 4-second turn-on delay.
- The amplifier is in drive protection mode. This can occur with improper source signals like infrasonic square waves or input overloads that excessively clip the input signal.
- The breaker has tripped. First disconnect your speakers from the affected channel(s) one by one to determine if one of the loads is shorted. Reset the breaker and apply an input signal. If the signal presence indicator flashes, then try a different speaker or cable to determine where the short is occurring. If no short can be found, turn off the amp and allow the amp to cool. If indicators do not return to normal after restarting your amp, return amp to Crown or an authorized Crown Service Center for servicing.
- Input signal level is very low.
- Level controls are turned down.
- Input cables are not connected.

CONDITION: Distorted sound.

POSSIBLE REASON:

- Input signal level is too high. Turn down your amplifier level controls. NOTE: Your amplifier should never be operated at a level which causes the IOC LEDs to flash yellow constantly.

| | | |
|-----|--|------------|
| Key | | Off |
| | | Lit |
| | | Green Lit |
| | | Yellow Lit |

7 Specifications

| Minimum Guaranteed Power | Power-Tech 1.1 | Power-Tech 2.1 | Power-Tech 3.1 |
|--|-----------------------------------|-----------------------------------|-----------------------------------|
| 120 VAC, 60 Hz Units, Stereo mode, per channel, both channels driven | | | |
| 1 kHz with 0.1% THD | | | |
| Stereo, 4 ohms per ch. | 305 | 460 | 760 |
| Stereo, 8 ohms per ch. | 220 | 325 | 540 |
| 120 VAC, 60 Hz Units, Bridge mono mode | | | |
| 1 kHz with 0.1% THD | | | |
| 8 ohms | 605 | 910 | 1,525 |
| 16 ohms | 445 | 660 | 1,090 |
| 120 VAC, 60 Hz Units, Parallel mono mode | | | |
| 1 kHz with 0.1% THD | | | |
| 2 ohms | 605 | 920 | 1,530 |
| 4 ohms | 440 | 655 | 1,080 |
| Performance | Power-Tech 1.1 | Power-Tech 2.1 | Power-Tech 3.1 |
| Frequency Response (at 1 watt, 20Hz - 20 kHz) | ± 0.1 dB | ± 0.1 dB | ± 0.1 dB |
| Phase Response (at 1 watt, 10Hz - 20 kHz) | ± 10° | ± 10° | ± 10° |
| Signal to Noise Ratio below rated power (20 Hz to 20 kHz) | >100 dB | >100 dB | >100 dB |
| Total Harmonic Distortion (THD) at rated power, from 20 Hz to 1 kHz | < 0.05% | < 0.05% | < 0.05% |
| Total Harmonic Distortion (THD) at rated power, at 20 kHz | < 0.1% | < 0.1% | < 0.1% |
| Intermodulation Distortion (IMD) 60 Hz and 7 kHz at 4:1, from 163 milliwatts to full bandwidth power | < 0.05% | < 0.05% | < 0.05% |
| Damping Factor: 10 Hz to 400 Hz | >1000 | >1000 | >1000 |
| Crosstalk (below rated power, 20 Hz to 1 kHz) | > 60 dB | > 60 dB | > 60 dB |
| Controlled Slew Rate | >13 volts/ms | >13 volts/ms | >13 volts/ms |
| Input Impedance nominally balanced, nominally unbalanced | 20 k ohms, 10 k ohms | 20 k ohms, 10 k ohms | 20 k ohms, 10 k ohms |
| Load Impedance (Note: Safe with all types of loads) | | | |
| Stereo | 4-8 ohms | 4-8 ohms | 4-8 ohms |
| Bridge Mono | 8-16 ohms | 8-16 ohms | 8-16 ohms |
| Parallel Mono | 2-4 ohms | 2-4 ohms | 2-4 ohms |
| Voltage Gain (at maximum level setting) | | | |
| 0.775V sensitivity | 35 dB | 36 dB | 38 dB |
| 1.4V sensitivity | 30 dB | 31 dB | 33 dB |
| Required AC Mains (configured country-specific) | 50/60 Hz, 100-240VAC (+10%, -15%) | 50/60 Hz, 100-240VAC (+10%, -15%) | 50/60 Hz, 100-240VAC (+10%, -15%) |
| Power Draw at Idle (configured country-specific) | 90 watts or less | 90 watts or less | 90 watts or less |

7 Specifications

| Performance (continued) | Power-Tech 1.1 | Power-Tech 2.1 | Power-Tech 3.1 |
|---|---|---|---|
| AC Line Current 100 and 120 VAC units 220 and 240 VAC units | 6 A 3 A | 10 A 5 A | 15 A 7 A |
| Ventilation | Flow-through ventilation from front to side panels | Flow-through ventilation from front to side panels | Flow-through ventilation from front to side panels |
| Cooling | Internal heat sinks with forced-air cooling for rapid, uniform heat dissipation | Internal heat sinks with forced-air cooling for rapid, uniform heat dissipation | Internal heat sinks with forced-air cooling for rapid, uniform heat dissipation |
| Dimensions | | | |
| Width | EIA Standard 19-inch (48.3 cm) rack mount (EIA RS-310-B) | EIA Standard 19-inch (48.3 cm) rack mount (EIA RS-310-B) | EIA Standard 19-inch (48.3 cm) rack mount (EIA RS-310-B) |
| Height | 3.5 inches (8.9 cm) | 3.5 inches (8.9 cm) | 3.5 inches (8.9 cm) |
| Depth | 16 inches (40.6 cm) | 16 inches (40.6 cm) | 16 inches (40.6 cm) |
| Weight (120VAC, 60 Hz units) | | | |
| Net Weight | 30 lb (13.6 kg) | 33 lb (15.0kg) | 36 lb 8 oz (16.6 kg) |
| Shipping Weight | 34 lb (15.4 kg) | 37 lb (16.8kg) | 40 lb 8 oz (18.4 kg) |
| Weight (International units) | | | |
| Net Weight | 31 lb 2 oz (14.1 kg) | 35 lb 12 oz (16.9 kg) | 37 lb 3 oz (16.6 kg) |
| Shipping Weight | 34 lb 9 oz (15.7 kg) | 38 lb 13 oz (17.6 kg) | 40 lb 16 oz (18.6 kg) |

8 Service

Crown amplifiers are quality units that rarely require servicing. Before returning your unit for servicing, please contact Crown Factory Service to verify the need for servicing.

This unit has very sophisticated circuitry which should only be serviced by a fully trained technician. This is one reason why each unit bears the following label:



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

8.1 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 pack.

8.2 US and Canada 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.

8.2.1 Service at a US or Canada 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 pack. A list of authorized service centers in your area can be obtained from the Crown website at www.crownaudio.com, or by calling Crown Factory Service.

8.2.2 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 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 Factory Service to receive reimbursement.

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

8.2.3 Factory Service Shipping Instructions:

1. Before sending a Crown product to the factory for service, first call the Crown Factory Service for a return authorization (RA) number.
2. Be sure to fill out the service information form that follows and enclose it with your shipment, either inside the box or in a packing slip envelope securely attached to the outside of the shipping carton. Do not send the service information form separately. If you are sending the unit from a Shipping Center, we recommend taping the form to the product. We also recommend recording the serial number and model before shipping for your reference.
3. To ensure the safe transportation of your unit to the factory, ship it in an original factory packing container. If you don't have the original carton, you may obtain a product service foam-in-place shipping pack from the Crown Factory Service at the number listed below. For non-warranty service, you may also provide your own

shipping pack, however we still recommend using a Crown Supplied Shipping Container. Minimum recommended requirements for materials are as follows: 275 P.S.I. burst test Double-Wall carton that allows for 2-inch solid Styrofoam on all six sides of unit or 3 inches of plastic bubble wrap on all six sides of unit; securely seal the package with an adequate carton sealing tape. Do not use light boxes or "peanuts." Damage caused by poor packing cannot be covered under warranty.

4. Do not ship the unit in any kind of cabinet (wood or metal). Ignoring this warning may result in extensive damage to the unit and the cabinet. Accessories are not needed-do not send the product documentation, cables and other hardware.

If you have any questions, please contact Crown Factory Service.

Crown Factory Service

1718 W. Mishawaka Rd.,
Elkhart, Indiana 46517 U.S.A.

Telephone: 574-294-8200
800-342-6939 (North America,
Puerto Rico, and Virgin Islands only)

Facsimile:
574-294-8301 (Technical Support)
574-294-8124 (Factory Service)

Internet:
<http://www.crownaudio.com>

9 Warranty



SUMMARY OF WARRANTY

Crown International, 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 inter-

UNITED STATES & CANADA

est, 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. Warranty work for some products can only be performed at our 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 including the return shipment, 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 within 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 AND 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 after expiration of the warranty period.

THIS STATEMENT OF WARRANTY SUPERSEDES ANY OTHERS CONTAINED IN THIS MANUAL FOR CROWN PRODUCTS. 12/01

9 Warranty



WORLDWIDE EXCEPT USA & CANADA

SUMMARY OF WARRANTY

Crown International, 1718 West Mishawaka Road, Elkhart, Indiana 46517-4095 U.S.A. warrants to you, the ORIGINAL PURCHASER and ANY SUBSEQUENT OWNER of each NEW Crown1 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 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 your local Crown importer of your need for warranty service within the warranty period. All components must be shipped in the original box. 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 AND 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 after expiration of the warranty period.

THIS STATEMENT OF WARRANTY SUPERSEDES ANY OTHERS CONTAINED IN THIS MANUAL FOR CROWN PRODUCTS. 7/01



Crown Factory Service Information

Shipping Address: Crown International, Factory Service, 1718 W. Mishawaka Rd., Elkhart, IN 46517
Phone: 1-800-342-6939 or 1-574-294-8200 Fax: 1-574-294-8124

Owner's Name : _____

Shipping Address: _____

Phone Number: _____ Fax Number: _____ Email: _____

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 system: _____

If warranty has expired, payment will be: Cash/Check VISA MasterCard C.O.D. Purchase Order for Crown Dealer

Card Number: _____ Exp. Date: _____

Signature: _____

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



H A Harman International Company

PT 1.1

AC Power Draw and Thermal Dissipation

This document provides detailed information about the amount of power and current drawn from the AC mains by the *PT 1.1* amplifier and the amount of heat produced under various conditions. The calculations presented here are intended to provide a realistic and reliable depiction of the amplifier. The following assumptions or approximations were made:

- The amplifier's available channels are loaded and full power is being delivered.
- The amplifier efficiency at standard 1-kHz power is estimated to be 65%.
- Quiescent power draw is approximately 90 watts.
- Typical power draw for the internal fan is 12 watts or less.
- The estimated duty cycles take into account the typical crest factor for each type of source material.
- Duty cycle of pink noise is 50%.
- Duty cycle of highly compressed rock 'n' roll midrange is 40%.
- Duty cycle of rock 'n' roll is 30%.
- Duty cycle of background music is 20%.
- Duty cycle of continuous speech is 10%.
- Duty cycle of infrequent, short duration paging is 1%.

Here are the equations used to calculate the data presented in Figure 1:

$$\text{AC Mains Power Draw (watts)} = \frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle}}{\text{Amplifier Efficiency}} + \text{Quiescent and Fan Power Draw (watts)}$$

The following equation converts power draw in watts to current draw in amperes:

$$\text{Current Draw (amperes)} = \frac{\text{AC Mains Power Draw (watts)}}{\text{AC Mains Voltage} \times \text{Power Factor}}$$

The value used for Power Factor is 0.83. The Power Factor variable is needed to compensate for the difference in phase between the AC mains voltage and current. The following equation is used to calculate thermal dissipation:

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle} \times \text{Amplifier Inefficiency}}{\text{Amplifier Efficiency}} + \text{Quiescent and Fan Power Draw (watts)} \right) \times 3.415$$

The value used for inefficiency is 0.35 (1.00–0.65). The factor 3.415 converts watts to btu/hr. Thermal dissipation in btu is divided by the constant 3.968 to get kcal. If you plan to measure output power under real-world conditions, the following equation may also be helpful:

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total measured output power from all channels (watts)} \times \text{Amplifier Inefficiency}}{\text{Amplifier Efficiency}} + \text{Quiescent and Fan Power Draw (watts)} \right) \times 3.415$$

PT 1.1

| Duty Cycle | LOAD | | | | | | | | | |
|------------|-----------------------------|--------------------------------------|---------|---------------------|--------|---------------------------------------|--------------------|---------|---------------------|-----|
| | AC Mains Power Draw (Watts) | 4 Ω DUAL / 8 Ω BRIDGE / 2 Ω PARALLEL | | | | 8 Ω DUAL / 16 Ω BRIDGE / 4 Ω PARALLEL | | | | |
| | | Current Draw(Amps) | | Thermal Dissipation | | AC Mains Power Draw (Watts) | Current Draw(Amps) | | Thermal Dissipation | |
| 120VAC | 240VAC | btu/hr | kcal/hr | 120VAC | 240VAC | | btu/hr | kcal/hr | | |
| 50% | 559 | 5.6 | 2.8 | 868 | 219 | 428 | 4.3 | 2.2 | 712 | 179 |
| 40% | 465 | 4.7 | 2.3 | 756 | 191 | 361 | 3.6 | 1.8 | 631 | 159 |
| 30% | 372 | 3.7 | 1.9 | 644 | 162 | 293 | 2.9 | 1.5 | 550 | 139 |
| 20% | 278 | 2.8 | 1.4 | 532 | 134 | 225 | 2.3 | 1.1 | 469 | 118 |
| 10% | 184 | 1.8 | 0.9 | 420 | 106 | 158 | 1.6 | 0.8 | 388 | 98 |

Figure 1 Power Draw, Current Draw and Thermal Dissipation at Various Duty Cycles



H A Harman International Company

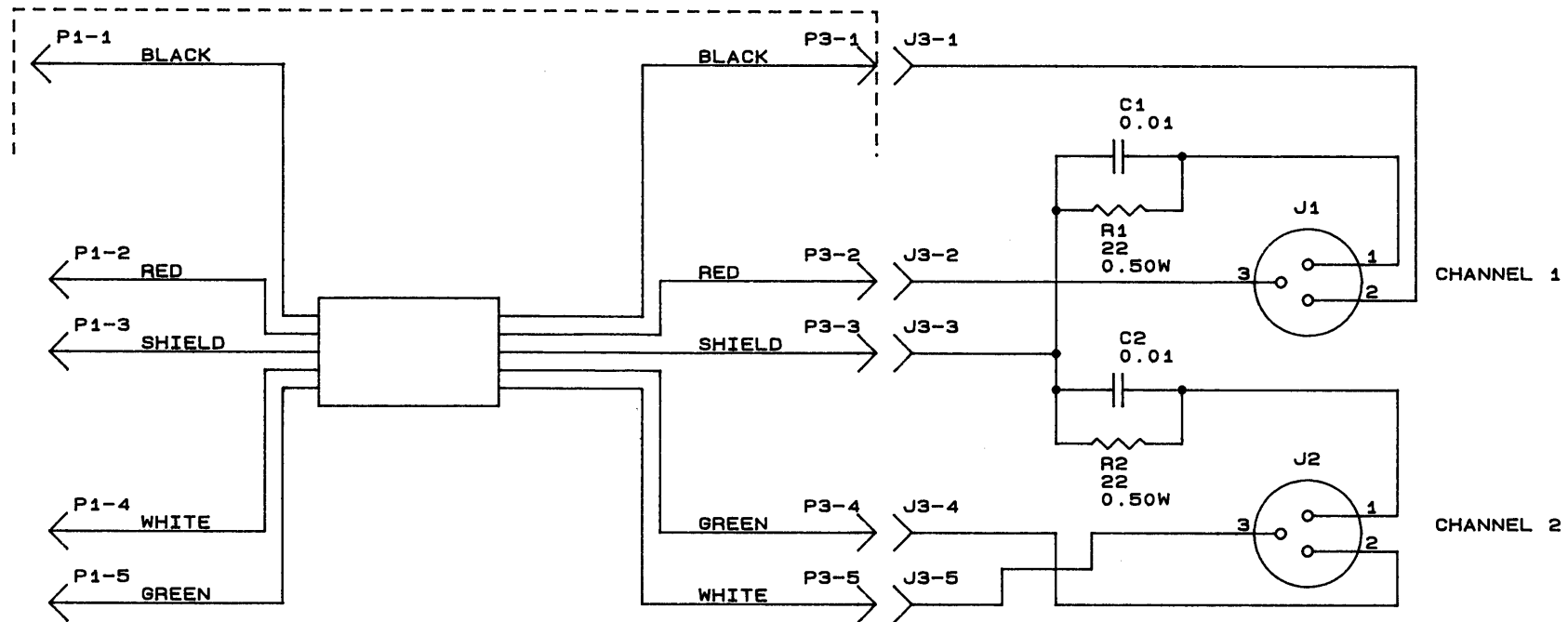
Crown International
P.O. Box 1000
Elkhart, IN 46515-1000
TEL: 219-294-8200
FAX: 219-294-8FAX
www.crownaudio.com

For more details refer to the applicable Reference Manual or Contact Crown Technical Support. The provided data should not be construed as specifications.
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| E.C.N. | ZONE | REV | DESCRIPTION | DATE | BY | APPROVALS | | | | |
|--------|------|-----|-------------|------|----|-----------|----|----|----|--|
| | | | | | | CK | ME | EE | PE | |
| | ○ | | | | | | | | | |
| | ○ | | | | | | | | | |
| | ○ | | | | | | | | | |

D 7623-8
PART OF NEXT
HIGHER ASSEMBLY



- NOTES :**
1. ALL RESISTORS ARE IN OHMS, 1/4W, 5% UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.

| LAST USED | OBSOLETED |
|-----------|-----------|
| C2 | |
| J3 | |
| R2 | |

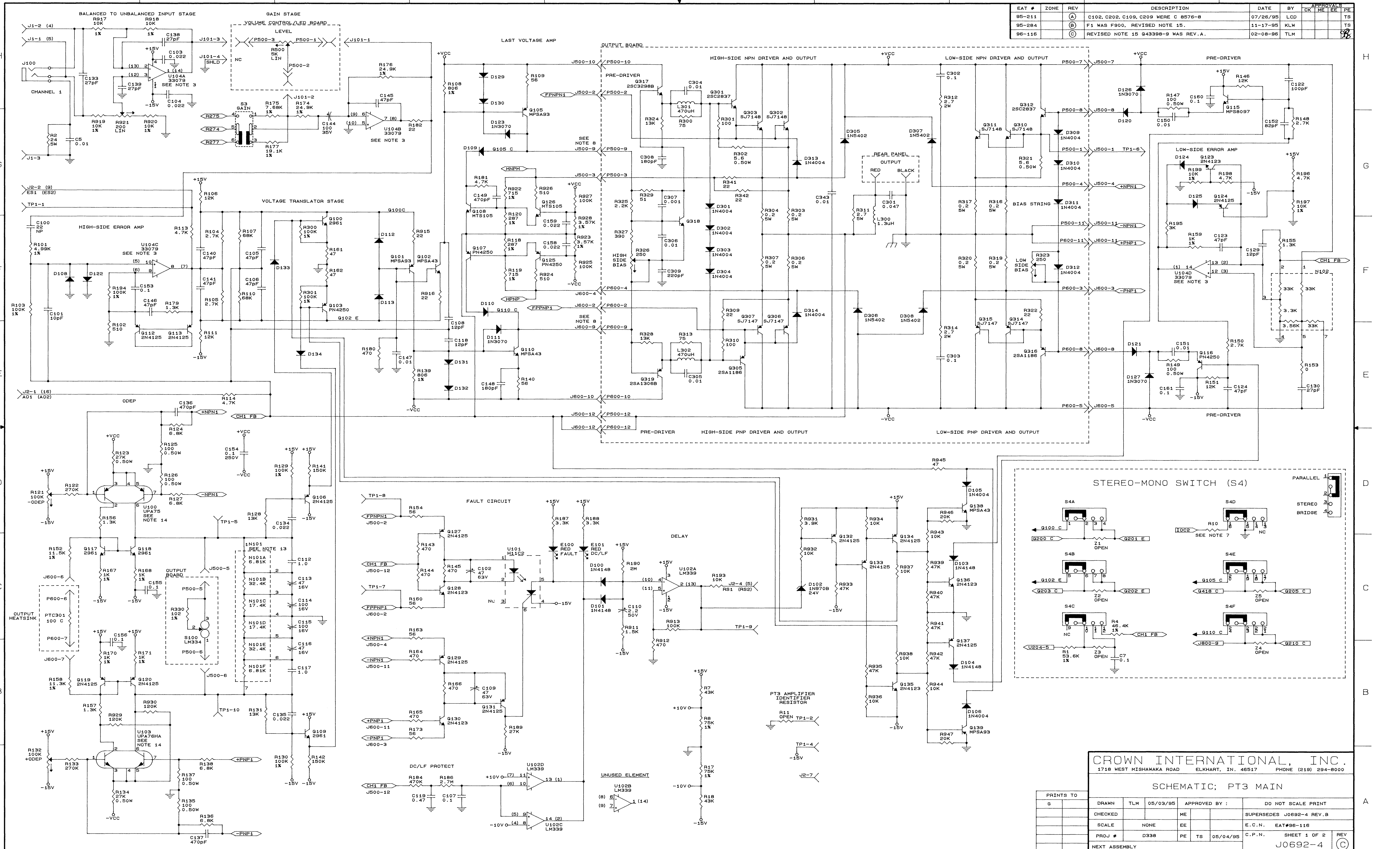
CROWN INTERNATIONAL, INC.
1718 W. MISHAWAKA RD. ELKHART, IN. 46517 (219) 294-8000

SCHEM., MT-XLR

| | | | | |
|---------------|------|----------|----------------------|--------------------|
| DRAWN | LCD | 04/25/95 | APPROVED BY: | DO NOT SCALE PRINT |
| CHECKED | | | ME | SUPERSEDES |
| SCALE | NONE | | EE | E.C.N. |
| PROJ # | D152 | | PE <i>Jm 2-26-96</i> | C.P.N. |
| NEXT ASSEMBLY | | | | J0690-8 |

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| EAT # | ZONE | REV | DESCRIPTION | DATE | BY | APPROVALS |
|--------|------|-----|--------------------------------------|----------|-----|-----------|
| 95-211 | | (A) | C102, C202, C109, C209 WERE C 8576-8 | 07/26/95 | LCD | TS |
| 95-284 | | (B) | F1 WAS F900, REVISED NOTE 15. | 11-17-95 | KLW | TS |
| 96-116 | | (C) | REVISED NOTE 15 Q43398-9 WAS REV.A. | 02-08-96 | TLM | TS |



CROWN INTERNATIONAL, INC.
 1718 WEST MISHAWAKA ROAD ELKHART, IN. 46517 PHONE (219) 294-8000

| PRINTS TO | | | |
|-----------|--|--|--|
| G | | | |

| DRAWN | TLM | 05/03/95 | APPROVED BY : | DO NOT SCALE PRINT |
|---------------|------|----------|---------------|--------------------------|
| CHECKED | ME | | | SUPERSEDES J0692-4 REV.B |
| SCALE | NONE | EE | | E.C.N. EAT#96-116 |
| PROJ # | D338 | PE TS | 05/04/95 | C.P.N. SHEET 1 OF 2 REV |
| NEXT ASSEMBLY | | | | J0692-4 (C) |

| E.C.N. | ZONE | REV | DESCRIPTION | DATE | BY | APPROVALS |
|--------|------|-----|-------------|------|----|--------------|
| | | 0 | | | | CK ME LEE PE |

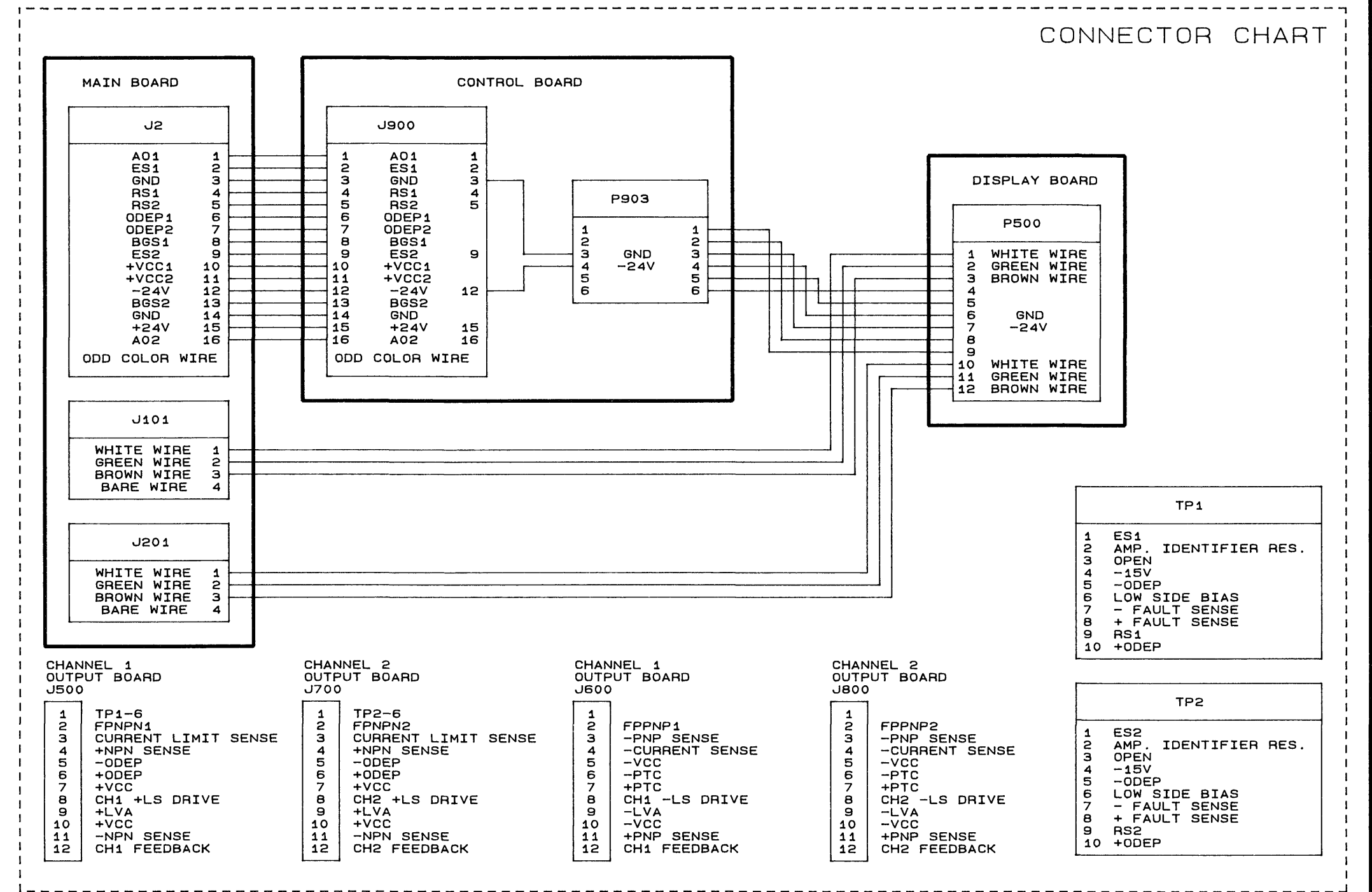
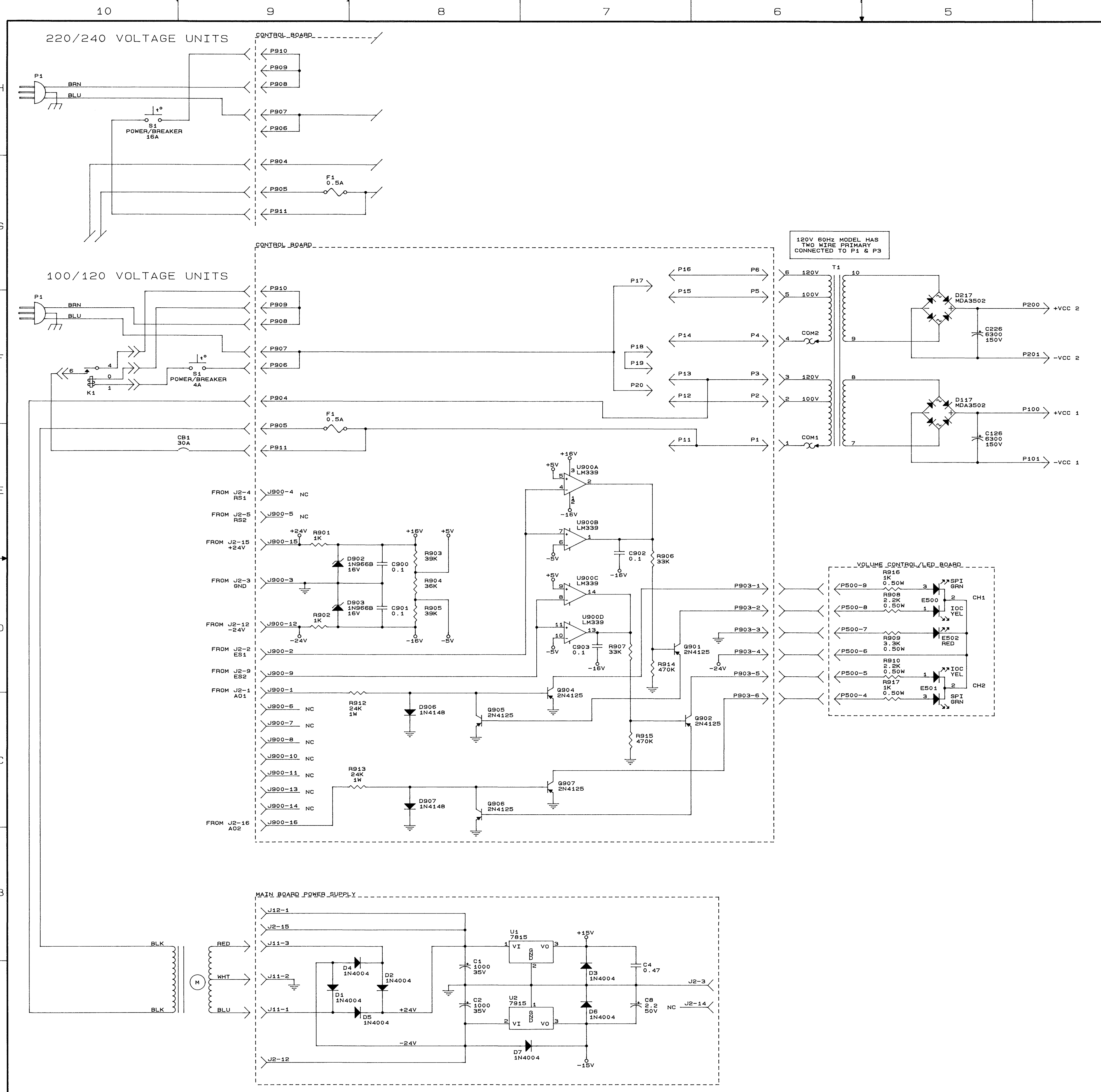


TABLE 1

| AC LINE VOLTAGE | 100V | 120V | 220/230V | 240V | 120V 60HZ |
|-----------------------|---------|----------|----------|---------|-----------|
| WIRING CONFIGURATIONS | P15-P17 | P16-P17 | P15-P17 | P16-P17 | P6-P16 |
| FOR SPECIFIC VOLTAGES | P11-P14 | P11-P14 | P14-P18 | P14-P18 | P5-P15 |
| | P12-P20 | P13-P20 | P13-P19 | P13-P19 | P13-P20 |
| TRANSFORMER CPN | | D 6914-2 | | | D 6803-7 |

- NOTES:
- ALL RESISTORS ARE IN OHMS, 1/4W, 5% UNLESS OTHERWISE SPECIFIED.
 - ALL CAPACITORS ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 - VALUES SELECTED AS NEEDED FOR DIFFERENT OP AMP CHARACTERISTICS.
 - CHANNEL 2 IS SHOWN ON SHEET 3. WHEN SHEET 3 IS NOT PRINTED, THEN FOR CHANNEL 2 ADD 100 TO REFERENCE DESIGNATORS. (EXAMPLE: CHANNEL 1 R101 WOULD BE CHANNEL 2 R201.) CONNECTOR AND IC PIN NUMBERS FOR CHANNEL 2 ARE SHOWN IN PARENTHESES WHEN THEY DIFFER FROM CHANNEL 1. EXCEPTIONS ARE CHAN 1 R2 CORRESPONDS TO CHAN 2 R3, CHAN 1 C5 CORRESPONDS TO CHAN 2 C6, CHAN 1 J500 CORRESPONDS TO CHAN 2 J700, AND CHAN 1 J600 CORRESPONDS TO CHAN 2 J800.
 - ALL DIODES ARE 1N4148 UNLESS OTHERWISE SPECIFIED.
 - ON J500 AND J700 THE STRIPED WIRE GOES TO PIN 12 OF THE BOARD AND THE PIN NUMBERS MOLDED ON THE CABLE SOCKET ARE REVERSED FROM THE PIN NUMBERS ON THE BOARD AND THE SCHEMATIC.
 - STANDARD UNIT HAS R10 OPEN. INSTALL JUMPER IN R10 TO DISABLE CHANNEL 2 IOC LIGHT IN PARALLEL MONO MODE.
 - POWER SUPPLY VOLTAGES SHOWN UNDER NO LOAD/NO SIGNAL CONDITIONS.
 - CHANNEL 2 PRE-DRIVER BASES LOOP THROUGH STEREO-MONO SWITCH S100, SECTIONS E AND F.
 - T1 INCLUDES AN INTERNAL THERMAL SWITCH.
 - R330 VALUE DEPENDS ON GRADE OF SENSOR S100 AS FOLLOWS:

| GRADE OF SENSOR S100 | VALUE OF RESISTOR R330 |
|----------------------|------------------------|
| BLUE | 107 OHM 1% 0.25W |
| GREEN | 102 OHM 1% 0.25W |
| YELLOW | 100 OHM 1% 0.25W |
 - R5 IS LEFT EMPTY.
 - ALTERNATE 1/4W 1% RESISTORS ARE DESIGNATED AS N101A, N101B ETC.
 - NEC COMPONENTS ARE SHOWN. ALTERNATE TOSHIBA PARTS ARE: NPN P/N 2SC3381 PNP P/N 2SA1348
 - SCHEMATIC APPLIES TO AMPLIFIERS USING MAIN BOARD D8827-4 / MODULE Q43388-8 REV B, OUTPUT BOARD P10429-2 / MODULE Q43338-3 AND CONTROL BOARD P10448-2 / MODULE Q43475-5.

COMMON

| LAST USED | OBSOLETE |
|-----------|--------------------|
| C8 | C3 |
| D7 | |
| R18 | R2, 3, 5, 6, 11-15 |
| S4 | S1, 2 |
| U2 | |

CHANNEL 1

| LAST USED | OBSOLETE |
|-----------|--|
| C157 | C102, 121, 125, 127, 128, 131, 132, 142, 143 |
| D136 | D100-107, 114-116, 118, 119 |
| N102 | |
| Q124 | Q114 |
| R199 | R100, 112, 115, 116, 117, 169, 172, 178 |
| R916 | R900-905 |
| U104 | |

CHANNEL 2

| LAST USED | OBSOLETE |
|-----------|--|
| C257 | C202, 221, 225, 227, 228, 231, 232, 242, 243 |
| D236 | D200-207, 214-216, 218, 219 |
| N202 | |
| Q224 | Q214 |
| R299 | R200, 212, 215, 216, 217, 269, 272, 278 |
| R1016 | R1000-1005 |
| U204 | |

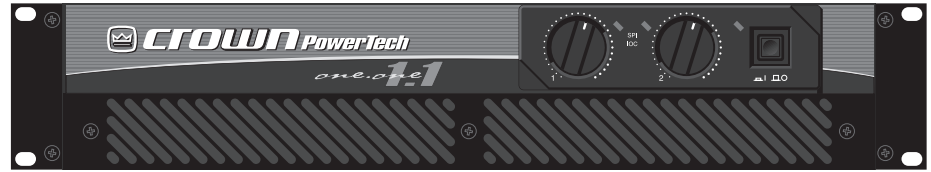
CROWN INTERNATIONAL, INC.
1718 WEST MISHAWAKA ROAD ELKHART, IN. 46517 PHONE (219) 294-8000

SCHEMATIC; PT3 MAIN

| PRINTS TO | SCALE | PROJ # | DATE | APPROVED BY : | DO NOT SCALE PRINT |
|-----------|-------|--------|----------|---------------|--------------------------|
| G | NONE | D338 | 05/04/95 | ME | SUPERSEDES J0692-4 REV.- |
| | | | | | E.C.N. EAT#98-116 |
| | | | | | C.P.N. SHEET 2 OF 2 |
| | | | | | J0692-4 |

POWER - TECH SERIES

PT 1.1



It's hard to please every crowd. But you'll have a better chance when you use a Crown Power-Tech .1 Series amplifier. Musicians and DJs alike demand a lot from their systems—clean, punchy sound; reliability; ruggedness; smaller size; less weight—all at a reasonable price. And Crown PT .1s bring these benefits and much more to the table. That's because at Crown, we've built our reputation around legendary sound and support.

Power-Tech .1 Series amplifiers are compact, professional stereo power amplifiers engineered to meet the most demanding sound reinforcement needs. They compare very favorably to more expensive amplifiers, providing uncolored sound and signal-to-noise ratios commonly associated with recording studios. Plus, every Power-Tech .1 amplifier is backed by Crown's unequalled Three-Year, No-Fault, fully-transferrable warranty that covers everything.

With over five decades of experience designing and building rock-solid products, Crown is the standard in amp technology. So check out the affordable, "all-Crown" Power-Tech .1. They are a powerful argument for quality and value!

For more details about the Power-Tech .1 Series, contact the Crown Technical Support Group at 800-342-6939 or 219-294-8200. Also, visit the Crown Audio website at www.crownaudio.com.

Specifications

The following applies to units in Stereo mode with 8-ohm loads and an input sensitivity of 26 dB unless otherwise specified.

120 VAC, 60 Hz Units: refers to amplifiers with dedicated transformers for 120 VAC, 60 Hz power mains.

International Units: refers to amplifiers with special multi-tap transformers that make them configurable for several AC mains voltages and line frequencies.

Performance

Frequency Response: ± 0.1 dB from 20 Hz to 20 kHz at 1 watt.

Phase Response: ± 10 degrees from 10 Hz to 20 kHz at 1 watt.

Signal-to-Noise: A-weighted, better than 105 dB below full bandwidth power. Better than 100 dB below full bandwidth power from 20 Hz to 20 kHz.

Total Harmonic Distortion (THD): Less than 0.05% at full bandwidth power from 20 Hz to 1 kHz increasing linearly to 0.1% at 20 kHz.

Features

- Rugged, professional power amplifier built for the road.
- Quick-access front panel power switch and level controls. Turn-on delay for loudspeaker protection.
- Patented **ODEP[®]** circuitry and **Grounded Bridge[™]** design combine to provide performance and reliability that surpass traditional designs.
- Easy to read signal presence (SPI) and distortion (**IOC[®]**) indicator for each channel.
- High damping factor provides superior control over low-frequency drivers for a

clean, accurate low end.

- Bridge-Mono and Parallel-Mono modes make it easy to optimize the amplifier's performance for a wide range of loads.
- Balanced phone jack inputs in parallel with XLR input connectors.
- Complete protection against shorted outputs, mismatched loads, overheating, input/output DC and high-frequency overload; full internal fault protection.
- Three-year, No-Fault, fully-transferrable warranty completely protects your investment and guarantees its specifications.

Intermodulation Distortion (IMD): (60 Hz and 7 kHz 4:1) Less than 0.05% from less than 171 milliwatts to full bandwidth power.

Damping Factor: Greater than 1,000 from 10 Hz to 400 Hz.

Crosstalk: Greater than 75 dB below full bandwidth power from 50 Hz to 2 kHz, rising linearly to greater than 60 dB at 20 kHz.

Controlled Slew Rate: Greater than 13 volts/ms.

Voltage Gain: 54:1 $\pm 6\%$ or 35 dB ± 0.5 dB at 0.775-volt sensitivity; 30:1 $\pm 6\%$ or 30 dB ± 0.5 dB at 1.4-volt sensitivity; 20:1 $\pm 6\%$ or 26 dB ± 0.5 dB at the maximum level setting.

Power

Output Power:

PT 1.1

| | *1 kHz Power | **20 Hz–20 kHz Power |
|----------------------|--------------|----------------------|
| 4-ohm Dual (per ch.) | 305W | 275W |
| 8-ohm Dual (per ch.) | 220W | 210W |
| 8-ohm Bridge-Mono | 605W | 550W |

*1 kHz Power: refers to maximum average power in watts at 1 kHz with 0.1% THD.

**20 Hz–20 kHz Power: refers to maximum average power in watts from 20 Hz to 20 kHz with 0.1% THD.

Load Impedance: Safe with all types of loads. Rated for 4 to 8 ohms in Stereo, 8 to 16 ohms in Bridge-Mono and 2 to 4 ohms in Parallel-Mono mode.

Required AC Mains: Power requirements are provided on each unit's back panel. 120 VAC, 60 Hz and 100/120/220/240 VAC, 50 to 60 Hz (non-convertible) units are available. Rated AC mains voltages are $\pm 10\%$. Quiescent power draw is 90 watts or less. 100 and 120 VAC units draw up to 6 amps of current; 220 and 240 VAC units draw up to 3 amps.

Low-Voltage Power Supply: A ± 24 VDC fan-former supply (fan motor winding) regulated to ± 15 VDC.

AC Connector: An appropriate AC line cord and plug are provided. North American units have a standard 3-wire, 15-amp grounded connector (NEMA 5-15P).

Controls

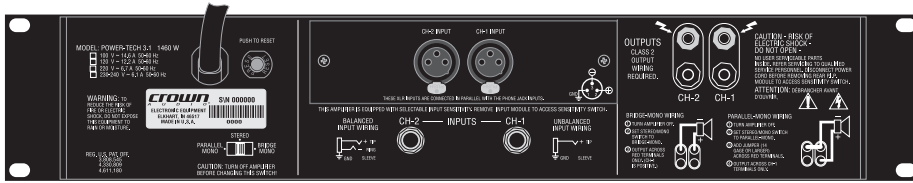
Power: A front panel push button switch used to turn the amplifier on and off. It is also a circuit breaker for the power supply.

Level: A front panel rotary potentiometer for each channel used to control the output level.

Stereo/Mono: A three-position back panel switch used to select Stereo, Bridge-Mono or Parallel-Mono mode.

Sensitivity: A three-position switch behind the input module used to select the input sensitivity for both channels: 0.775 volts or 1.4 volts for standard 1 kHz power, or 26 dB voltage gain.

PT 1.1



Indicators

Enable: This red indicator shows the on/off status of the low voltage power supply.

Signal/IOC: Each channel has a two color indicator that flashes green to show signal presence and yellow if the amplifier causes distortion of 0.05% or more.

Input/Output

Input Connector: Balanced 1/4-inch phone jacks and XLR connectors in parallel.

Input Impedance: Nominally 20 K ohms, balanced; 10 K ohms, unbalanced.

Output Connector: Two sets of color-coded binding posts.

Output Impedance: Less than 10 milliohms in series with less than 2 microhenries.

DC Output Offset: Less than 10 millivolts.

Output Signal

Stereo: Unbalanced, two-channel.

Bridge-Mono: Balanced, single-channel. Channel 1 controls are active; Channel 2 controls should be turned down and not used.

Parallel-Mono: Unbalanced, single-channel. Channel 1 controls are active; Channel 2 controls should be turned down and not used.

Protection

Power-Tech .1 Series amplifiers are protected against shorted, open or mismatched loads; overloaded power supplies; excessive temperature; chain destruction phenomena; input overload and high-frequency blowups. They also protect loudspeakers from input and output DC, as well as providing protection from turn-on/turn-off transients.

If operating conditions are unreasonable, the patented ODEP circuitry proportionally limits the drive level to protect the output transistors, particularly in the case of elevated temperature. A thermal switch imbedded in the transformer protects the power supplies from overload. In the rare event that a transformer overheats, the thermal switch removes power, waits until the unit has cooled to a safe temperature and then resets itself.

Turn On: Four-second delay with no dangerous transients. Contact us if you need to change the delay.

Construction

Durable black finish on steel chassis with special "flow-through" ventilation from front to side panels.

Cooling: Internal heat sinks with forced-air cooling for rapid, uniform heat dissipation.

Dimensions: Standard 19-inch (48.3-cm) rack mount width (EIA RS-310-B), 3.5-inch (8.9-cm) height and 16-inch (40.6-cm) depth behind the mounting surface.

Approximate Weight: Center of gravity is 6 inches (15.2 cm) behind front mounting surface.

120 VAC, 60 Hz Units: 30 pounds (13.6 kg) net; 34 pounds (15.4 kg) shipping weight.

International Units: 31 pounds, 2 ounces (14.1 kg) net; 34 pounds, 9 ounces (15.7 kg) shipping weight.

Crown's Three-Year, No-Fault, Fully Transferable Warranty

Crown offers a Three-Year, No-Fault, Fully Transferable Warranty for every new Crown amplifier—an unsurpassed industry standard. With this unprecedented No-Fault protection, your new Crown amplifier is warranted to meet or exceed original specifications for the first three years of ownership. During this time, if your amplifier fails, or does not perform to original specifications, it will be repaired or replaced at our expense. About the only things not covered by this warranty are those losses normally covered by insurance and those caused by intentional abuse. And the coverage is transferable, should you sell your amplifier.

See your authorized Crown dealer for full warranty disclosure and details. For customers outside of the USA, please contact your authorized Crown distributor for warranty information or call 219-294-8200.



A Harman International Company

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Specifications subject to change without prior notice. Latest information available at www.crownaudio.com.

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PT 2.1

AC Power Draw and Thermal Dissipation

This document provides detailed information about the amount of power and current drawn from the AC mains by the *PT 2.1* amplifier and the amount of heat produced under various conditions. The calculations presented here are intended to provide a realistic and reliable depiction of the amplifier. The following assumptions or approximations were made:

- The amplifier's available channels are loaded and full power is being delivered.
- The amplifier efficiency at standard 1-kHz power is estimated to be 65%.
- Quiescent power draw is approximately 90 watts.
- Typical power draw for the internal fan is 12 watts or less.
- The estimated duty cycles take into account the typical crest factor for each type of source material.
- Duty cycle of pink noise is 50%.
- Duty cycle of highly compressed rock 'n' roll midrange is 40%.
- Duty cycle of rock 'n' roll is 30%.
- Duty cycle of background music is 20%.
- Duty cycle of continuous speech is 10%.
- Duty cycle of infrequent, short duration paging is 1%.

Here are the equations used to calculate the data presented in Figure 1:

$$\text{AC Mains Power Draw (watts)} = \frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle}}{\text{Amplifier Efficiency}} + \text{Quiescent and Fan Power Draw (watts)}$$

The following equation converts power draw in watts to current draw in amperes:

$$\text{Current Draw (amperes)} = \frac{\text{AC Mains Power Draw (watts)}}{\text{AC Mains Voltage} \times \text{Power Factor}}$$

The value used for Power Factor is 0.83. The Power Factor variable is needed to compensate for the difference in phase between the AC mains voltage and current. The following equation is used to calculate thermal dissipation:

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle} \times \text{Amplifier Inefficiency}}{\text{Amplifier Efficiency}} + \text{Quiescent and Fan Power Draw (watts)} \right) \times 3.415$$

The value used for inefficiency is 0.35 (1.00–0.65). The factor 3.415 converts watts to btu/hr. Thermal dissipation in btu is divided by the constant 3.968 to get kcal. If you plan to measure output power under real-world conditions, the following equation may also be helpful:

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total measured output power from all channels (watts)} \times \text{Amplifier Inefficiency}}{\text{Amplifier Efficiency}} + \text{Quiescent and Fan Power Draw (watts)} \right) \times 3.415$$

PT 2.1

| Duty Cycle | LOAD | | | | | | | | | |
|------------|-----------------------------|--------------------------------------|---------|---------------------|--------|---------------------------------------|--------------------|---------|---------------------|-----|
| | AC Mains Power Draw (Watts) | 4 Ω DUAL / 8 Ω BRIDGE / 2 Ω PARALLEL | | | | 8 Ω DUAL / 16 Ω BRIDGE / 4 Ω PARALLEL | | | | |
| | | Current Draw(Amps) | | Thermal Dissipation | | AC Mains Power Draw (Watts) | Current Draw(Amps) | | Thermal Dissipation | |
| 120VAC | 240VAC | btu/hr | kcal/hr | 120VAC | 240VAC | | btu/hr | kcal/hr | | |
| 50% | 798 | 8.0 | 4.0 | 1153 | 291 | 590 | 5.9 | 3.0 | 905 | 228 |
| 40% | 656 | 6.6 | 3.3 | 984 | 248 | 490 | 4.9 | 2.5 | 785 | 198 |
| 30% | 515 | 5.2 | 2.6 | 815 | 205 | 390 | 3.9 | 2.0 | 666 | 168 |
| 20% | 373 | 3.7 | 1.9 | 646 | 163 | 290 | 2.9 | 1.5 | 546 | 138 |
| 10% | 232 | 2.3 | 1.2 | 477 | 120 | 190 | 1.9 | 1.0 | 427 | 108 |

Figure 1 Power Draw, Current Draw and Thermal Dissipation at Various Duty Cycles



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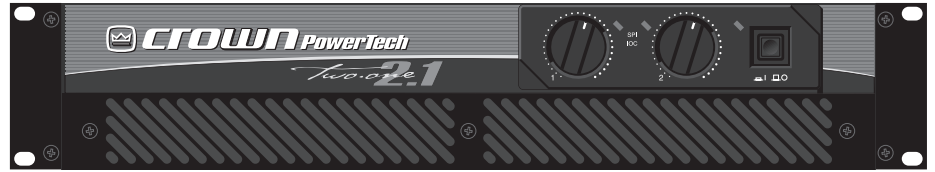
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POWER - TECH SERIES

PT 2.1



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Power-Tech .1 Series amplifiers are compact, professional stereo power amplifiers engineered to meet the most demanding sound reinforcement needs. They compare very favorably to more expensive amplifiers, providing uncolored sound and signal-to-noise ratios commonly associated with recording studios. Plus, every Power-Tech .1 amplifier is backed by Crown's unequalled Three-Year, No-Fault, fully-transferrable warranty that covers everything.

With over five decades of experience designing and building rock-solid products, Crown is the standard in amp technology. So check out the affordable, "all-Crown" Power-Tech .1. They are a powerful argument for quality and value!

For more details about the Power-Tech .1 Series, contact the Crown Technical Support Group at 800-342-6939 or 219-294-8200. Also, visit the Crown Audio website at www.crownaudio.com.

Specifications

The following applies to units in Stereo mode with 8-ohm loads and an input sensitivity of 26 dB unless otherwise specified.

120 VAC, 60 Hz Units: refers to amplifiers with dedicated transformers for 120 VAC, 60 Hz power mains.

International Units: refers to amplifiers with special multi-tap transformers that make them configurable for several AC mains voltages and line frequencies.

Performance

Frequency Response: ± 0.1 dB from 20 Hz to 20 kHz at 1 watt.

Phase Response: ± 10 degrees from 10 Hz to 20 kHz at 1 watt.

Signal-to-Noise: A-weighted, better than 105 dB below full bandwidth power. Better than 100 dB below full bandwidth power from 20 Hz to 20 kHz.

Total Harmonic Distortion (THD): Less than 0.05% at full bandwidth power from 20 Hz to 1 kHz increasing linearly to 0.1% at 20 kHz.

Features

- Rugged, professional power amplifier built for the road.
- Quick-access front panel power switch and level controls. Turn-on delay for loudspeaker protection.
- Patented **ODEP**® circuitry and **Grounded Bridge**™ design combine to provide performance and reliability that surpass traditional designs.
- Easy to read signal presence (SPI) and distortion (**IOC**®) indicator for each channel.
- High damping factor provides superior control over low-frequency drivers for a

clean, accurate low end.

- Bridge-Mono and Parallel-Mono modes make it easy to optimize the amplifier's performance for a wide range of loads.
- Balanced phone jack inputs in parallel with XLR input connectors.
- Complete protection against shorted outputs, mismatched loads, overheating, input/output DC and high-frequency overload; full internal fault protection.
- Three-year, No-Fault, fully-transferrable warranty completely protects your investment and guarantees its specifications.

Intermodulation Distortion (IMD): (60 Hz and 7 kHz 4:1) Less than 0.05% from less than 171 milliwatts to full bandwidth power.

Damping Factor: Greater than 1,000 from 10 Hz to 400 Hz.

Crosstalk: Greater than 90 dB below full bandwidth power from 50 Hz to 2 kHz, rising linearly to greater than 66 dB at 20 kHz.

Controlled Slew Rate: Greater than 13 volts/ms.

Voltage Gain: 66:1 $\pm 6\%$ or 36 dB ± 0.5 dB at 0.775-volt sensitivity; 36:1 $\pm 6\%$ or 31 dB ± 0.5 dB at 1.4-volt sensitivity; 20:1 $\pm 6\%$ or 26 dB ± 0.5 dB at the maximum level setting.

Power

Output Power:

PT 2.1

| | *1 kHz Power | **20 Hz–20 kHz Power |
|----------------------|--------------|----------------------|
| 4-ohm Dual (per ch.) | 460W | 425W |
| 8-ohm Dual (per ch.) | 325W | 310W |
| 8-ohm Bridge-Mono | 910W | 830W |

*1 kHz Power: refers to maximum average power in watts at 1 kHz with 0.1% THD.

**20 Hz–20 kHz Power: refers to maximum average power in watts from 20 Hz to 20 kHz with 0.1% THD.

Load Impedance: Safe with all types of loads. Rated for 4 to 8 ohms in Stereo, 8 to 16 ohms in Bridge-Mono and 2 to 4 ohms in Parallel-Mono mode.

Required AC Mains: Power requirements are provided on each unit's back panel. 120 VAC, 60 Hz and 100/120/220/240 VAC, 50 to 60 Hz (non-convertible) units are available. Rated AC mains voltages are $\pm 10\%$. Quiescent power draw is 90 watts or less. 100 and 120 VAC units draw up to 10 amps of current; 220 and 240 VAC units draw up to 5 amps.

Low-Voltage Power Supply: A ± 24 VDC fan-former supply (fan motor winding) regulated to ± 15 VDC.

AC Connector: An appropriate AC line cord and plug are provided. North American units have a standard 3-wire, 15-amp grounded connector (NEMA 5-15P).

Controls

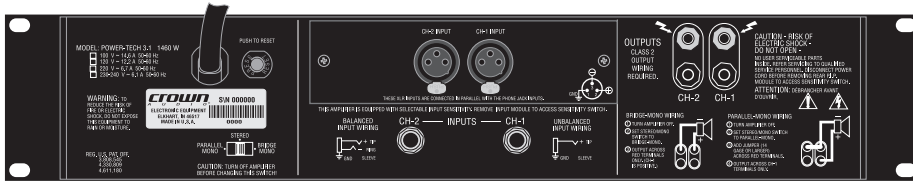
Power: A front panel push button switch used to turn the amplifier on and off. It is also a circuit breaker for the power supply.

Level: A front panel rotary potentiometer for each channel used to control the output level.

Stereo/Mono: A three-position back panel switch used to select Stereo, Bridge-Mono or Parallel-Mono mode.

Sensitivity: A three-position switch behind the input module used to select the input sensitivity for both channels: 0.775 volts or 1.4 volts for standard 1 kHz power, or 26 dB voltage gain.

PT 2.1



Indicators

Enable: This red indicator shows the on/off status of the low voltage power supply.

Signal/IOC: Each channel has a two color indicator that flashes green to show signal presence and yellow if the amplifier causes distortion of 0.05% or more.

Input/Output

Input Connector: Balanced 1/4-inch phone jacks and XLR connectors in parallel.

Input Impedance: Nominally 20 K ohms, balanced; 10 K ohms, unbalanced.

Output Connector: Two sets of color-coded binding posts.

Output Impedance: Less than 10 milliohms in series with less than 2 microhenries.

DC Output Offset: Less than 10 millivolts.

Output Signal

Stereo: Unbalanced, two-channel.

Bridge-Mono: Balanced, single-channel. Channel 1 controls are active; Channel 2 controls should be turned down and not used.

Parallel-Mono: Unbalanced, single-channel. Channel 1 controls are active; Channel 2 controls should be turned down and not used.

Protection

Power-Tech .1 Series amplifiers are protected against shorted, open or mismatched loads; overloaded power supplies; excessive temperature; chain destruction phenomena; input overload and high-frequency blowups. They also protect loudspeakers from input and output DC, as well as providing protection from turn-on/turn-off transients.

If operating conditions are unreasonable, the patented ODEP circuitry proportionally limits the drive level to protect the output transistors, particularly in the case of elevated temperature. A thermal switch imbedded in the transformer protects the power supplies from overload. In the rare event that a transformer overheats, the thermal switch removes power, waits until the unit has cooled to a safe temperature and then resets itself.

Turn On: Four-second delay with no dangerous transients. Contact us if you need to change the delay.

Construction

Durable black finish on steel chassis with special "flow-through" ventilation from front to side panels.

Cooling: Internal heat sinks with forced-air cooling for rapid, uniform heat dissipation.

Dimensions: Standard 19-inch (48.3-cm) rack mount width (EIA RS-310-B), 3.5-inch (8.9-cm) height and 16-inch (40.6-cm) depth behind the mounting surface.

Approximate Weight: Center of gravity is 6 inches (15.2 cm) behind front mounting surface.

120 VAC, 60 Hz Units: 33 pounds (15.0 kg) net; 37 pounds (16.8 kg) shipping weight.

International Units: 35 pounds, 12 ounces (16.9 kg) net; 38 pounds, 13 ounces (17.6 kg) shipping weight.

Crown's Three-Year, No-Fault, Fully Transferable Warranty

Crown offers a Three-Year, No-Fault, Fully Transferable Warranty for every new Crown amplifier—an unsurpassed industry standard. With this unprecedented No-Fault protection, your new Crown amplifier is warranted to meet or exceed original specifications for the first three years of ownership. During this time, if your amplifier fails, or does not perform to original specifications, it will be repaired or replaced at our expense. About the only things not covered by this warranty are those losses normally covered by insurance and those caused by intentional abuse. And the coverage is transferable, should you sell your amplifier.

See your authorized Crown dealer for full warranty disclosure and details. For customers outside of the USA, please contact your authorized Crown distributor for warranty information or call 219-294-8200.



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PT 3.1

AC Power Draw and Thermal Dissipation

This document provides detailed information about the amount of power and current drawn from the AC mains by the *PT 3.1* amplifier and the amount of heat produced under various conditions. The calculations presented here are intended to provide a realistic and reliable depiction of the amplifier. The following assumptions or approximations were made:

- The amplifier's available channels are loaded and full power is being delivered.
- The amplifier efficiency at standard 1-kHz power is estimated to be 65%.
- Quiescent power draw is approximately 90 watts.
- Typical power draw for the internal fan is 12 watts or less.
- The estimated duty cycles take into account the typical crest factor for each type of source material.
- Duty cycle of pink noise is 50%.
- Duty cycle of highly compressed rock 'n' roll midrange is 40%.
- Duty cycle of rock 'n' roll is 30%.
- Duty cycle of background music is 20%.
- Duty cycle of continuous speech is 10%.
- Duty cycle of infrequent, short duration paging is 1%.

Here are the equations used to calculate the data presented in Figure 1:

$$\text{AC Mains Power Draw (watts)} = \frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle}}{\text{Amplifier Efficiency}} + \text{Quiescent and Fan Power Draw (watts)}$$

The following equation converts power draw in watts to current draw in amperes:

$$\text{Current Draw (amperes)} = \frac{\text{AC Mains Power Draw (watts)}}{\text{AC Mains Voltage} \times \text{Power Factor}}$$

The value used for Power Factor is 0.83. The Power Factor variable is needed to compensate for the difference in phase between the AC mains voltage and current. The following equation is used to calculate thermal dissipation:

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle} \times \text{Amplifier Inefficiency}}{\text{Amplifier Efficiency}} + \text{Quiescent and Fan Power Draw (watts)} \right) \times 3.415$$

The value used for inefficiency is 0.35 (1.00–0.65). The factor 3.415 converts watts to btu/hr. Thermal dissipation in btu is divided by the constant 3.968 to get kcal. If you plan to measure output power under real-world conditions, the following equation may also be helpful:

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total measured output power from all channels (watts)} \times \text{Amplifier Inefficiency}}{\text{Amplifier Efficiency}} + \text{Quiescent and Fan Power Draw (watts)} \right) \times 3.415$$

PT 3.1

| Duty Cycle | LOAD | | | | | | | | | |
|------------|-----------------------------|--------------------------------------|---------|---------------------|--------|---------------------------------------|--------------------|---------|---------------------|-----|
| | AC Mains Power Draw (Watts) | 4 Ω DUAL / 8 Ω BRIDGE / 2 Ω PARALLEL | | | | 8 Ω DUAL / 16 Ω BRIDGE / 4 Ω PARALLEL | | | | |
| | | Current Draw(Amps) | | Thermal Dissipation | | AC Mains Power Draw (Watts) | Current Draw(Amps) | | Thermal Dissipation | |
| 120VAC | 240VAC | btu/hr | kcal/hr | 120VAC | 240VAC | | btu/hr | kcal/hr | | |
| 50% | 1259 | 12.6 | 6.3 | 1705 | 430 | 921 | 9.2 | 4.6 | 1300 | 328 |
| 40% | 1025 | 10.3 | 5.1 | 1425 | 359 | 755 | 7.6 | 3.8 | 1102 | 278 |
| 30% | 792 | 7.9 | 4.0 | 1146 | 289 | 588 | 5.9 | 3.0 | 903 | 228 |
| 20% | 558 | 5.6 | 2.8 | 866 | 218 | 422 | 4.2 | 2.1 | 705 | 178 |
| 10% | 324 | 3.3 | 1.6 | 587 | 148 | 256 | 2.6 | 1.3 | 506 | 128 |

Figure 1 Power Draw, Current Draw and Thermal Dissipation at Various Duty Cycles



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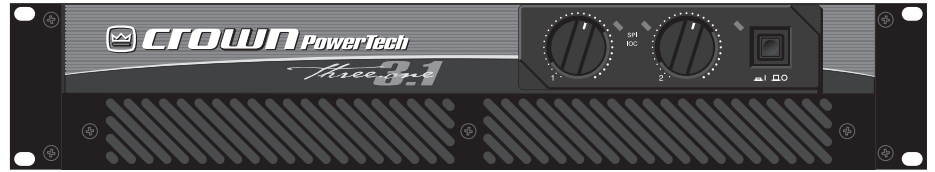
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POWER - TECH SERIES

PT 3.1



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120 VAC, 60 Hz Units: refers to amplifiers with dedicated transformers for 120 VAC, 60 Hz power mains.

International Units: refers to amplifiers with special multi-tap transformers that make them configurable for several AC mains voltages and line frequencies.

Performance

Frequency Response: ± 0.1 dB from 20 Hz to 20 kHz at 1 watt.

Phase Response: ± 10 degrees from 10 Hz to 20 kHz at 1 watt.

Signal-to-Noise: A-weighted, better than 105 dB below full bandwidth power. Better than 100 dB below full bandwidth power from 20 Hz to 20 kHz.

Total Harmonic Distortion (THD): Less than 0.05% at full bandwidth power from 20 Hz to 1 kHz increasing linearly to 0.1% at 20 kHz.

Features

- Rugged, professional power amplifier built for the road.
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- Easy to read signal presence (SPI) and distortion (**IOC[®]**) indicator for each channel.
- High damping factor provides superior control over low-frequency drivers for a clean, accurate low end.
- Bridge-Mono and Parallel-Mono modes make it easy to optimize the amplifier's performance for a wide range of loads.
- Balanced phone jack inputs in parallel with XLR input connectors.
- Complete protection against shorted outputs, mismatched loads, overheating, input/output DC and high-frequency overload; full internal fault protection.
- Three-year, No-Fault, fully-transferrable warranty completely protects your investment and guarantees its specifications.

Intermodulation Distortion (IMD): (60 Hz and 7 kHz 4:1) Less than 0.05% from less than 171 milliwatts to full bandwidth power.

Damping Factor: Greater than 1,000 from 10 Hz to 400 Hz.

Crosstalk: Greater than 90 dB below full bandwidth power from 50 Hz to 4 kHz, rising linearly to greater than 70 dB at 20 kHz.

Controlled Slew Rate: Greater than 13 volts/ms.

Voltage Gain: 84:1 $\pm 6\%$ or 38 dB ± 0.5 dB at 0.775-volt sensitivity; 46:1 $\pm 6\%$ or 33 dB ± 0.5 dB at 1.4-volt sensitivity; 20:1 $\pm 6\%$ or 26 dB ± 0.5 dB at the maximum level setting.

Power

Output Power:

PT 3.1

| | *1 kHz Power | **20 Hz–20 kHz Power |
|----------------------|---------------|----------------------|
| 4-ohm Dual (per ch.) | 760W | 715W |
| 8-ohm Dual (per ch.) | 540W | 525W |
| 8-ohm Bridge-Mono | 1,525W | 1,430W |

*1 kHz Power: refers to maximum average power in watts at 1 kHz with 0.1% THD.

**20 Hz–20 kHz Power: refers to maximum average power in watts from 20 Hz to 20 kHz with 0.1% THD.

Load Impedance: Safe with all types of loads. Rated for 4 to 8 ohms in Stereo, 8 to 16 ohms

in Bridge-Mono and 2 to 4 ohms in Parallel-Mono mode.

Required AC Mains: Power requirements are provided on each unit's back panel. 120 VAC, 60 Hz and 100/120/220/240 VAC, 50 to 60 Hz (non-convertible) units are available. Rated AC mains voltages are $\pm 10\%$. Quiescent power draw is 90 watts or less. 100 and 120 VAC units draw up to 15 amps of current; 220 and 240 VAC units draw up to 7 amps.

Low-Voltage Power Supply: A ± 24 VDC fan-former supply (fan motor winding) regulated to ± 15 VDC.

AC Connector: An appropriate AC line cord and plug are provided. North American units have a standard 3-wire, 15-amp grounded connector (NEMA 5-15P).

Controls

Power: A front panel push button switch used to turn the amplifier on and off.

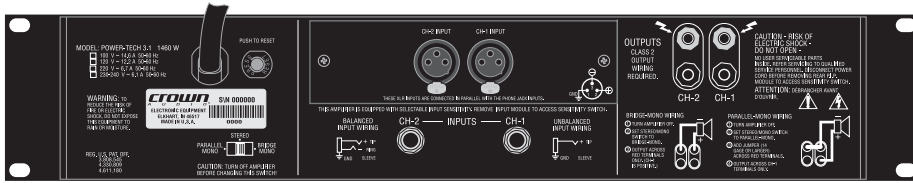
Level: A front panel rotary potentiometer for each channel used to control the output level.

Stereo/Mono: A three-position back panel switch used to select Stereo, Bridge-Mono or Parallel-Mono mode.

Sensitivity: A three-position switch behind the input module used to select the input sensitivity for both channels: 0.775 volts or 1.4 volts for standard 1 kHz power, or 26 dB voltage gain.

Reset: A back panel push button switch used to reset the circuit breaker that protects the power supplies.

PT 3.1



Indicators

Enable: This red indicator shows the on/off status of the low voltage power supply.

Signal/IOC: Each channel has a two color indicator that flashes green to show signal presence and yellow if the amplifier causes distortion of 0.05% or more.

Input/Output

Input Connector: Balanced 1/4-inch phone jacks and XLR connectors in parallel.

Input Impedance: Nominally 20 K ohms, balanced; 10 K ohms, unbalanced.

Output Connector: Two sets of color-coded binding posts.

Output Impedance: Less than 10 milliohms in series with less than 2 microhenries.

DC Output Offset: Less than 10 millivolts.

Output Signal

Stereo: Unbalanced, two-channel.

Bridge-Mono: Balanced, single-channel. Channel 1 controls are active; Channel 2 controls should be turned down and not used.

Parallel-Mono: Unbalanced, single-channel. Channel 1 controls are active; Channel 2 controls should be turned down and not used.

Protection

Power-Tech .1 Series amplifiers are protected against shorted, open or mismatched loads; overloaded power supplies; excessive temperature; chain destruction phenomena; input overload and high-frequency blowups. They also protect loudspeakers from input and output DC, as well as providing protection from turn-on/turn-off transients.

If operating conditions are unreasonable, the patented ODEP circuitry proportionally limits the drive level to protect the output transistors, particularly in the case of elevated temperature. A thermal switch imbedded in the transformer protects the power supplies from overload. In the rare event that a transformer overheats, the thermal switch removes power, waits until the unit has cooled to a safe temperature and then resets itself.

Turn On: Four-second delay with no dangerous transients. Contact us if you need to change the delay.

Construction

Durable black finish on steel chassis with special "flow-through" ventilation from front to side panels.

Cooling: Internal heat sinks with forced-air cooling for rapid, uniform heat dissipation.

Dimensions: Standard 19-inch (48.3-cm) rack mount width (EIA RS-310-B), 3.5-inch (8.9-cm) height and 16-inch (40.6-cm) depth behind the mounting surface.

Approximate Weight: Center of gravity is 6 inches (15.2 cm) behind front mounting surface.

120 VAC, 60 Hz Units: 36 pounds, 8 ounces (16.6 kg) net; 40 pounds, 8 ounces (18.4 kg) shipping weight.

International Units: 37 pounds, 3 ounces (16.6 kg) net; 40 pounds, 15 ounces (18.6 kg) shipping weight.

Crown's Three-Year, No-Fault, Fully Transferable Warranty

Crown offers a Three-Year, No-Fault, Fully Transferable Warranty for every new Crown amplifier—an unsurpassed industry standard. With this unprecedented No-Fault protection, your new Crown amplifier is warranted to meet or exceed original specifications for the first three years of ownership. During this time, if your amplifier fails, or does not perform to original specifications, it will be repaired or replaced at our expense. About the only things not covered by this warranty are those losses normally covered by insurance and those caused by intentional abuse. And the coverage is transferable, should you sell your amplifier.

See your authorized Crown dealer for full warranty disclosure and details. For customers outside of the USA, please contact your authorized Crown distributor for warranty information or call 219-294-8200.



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