

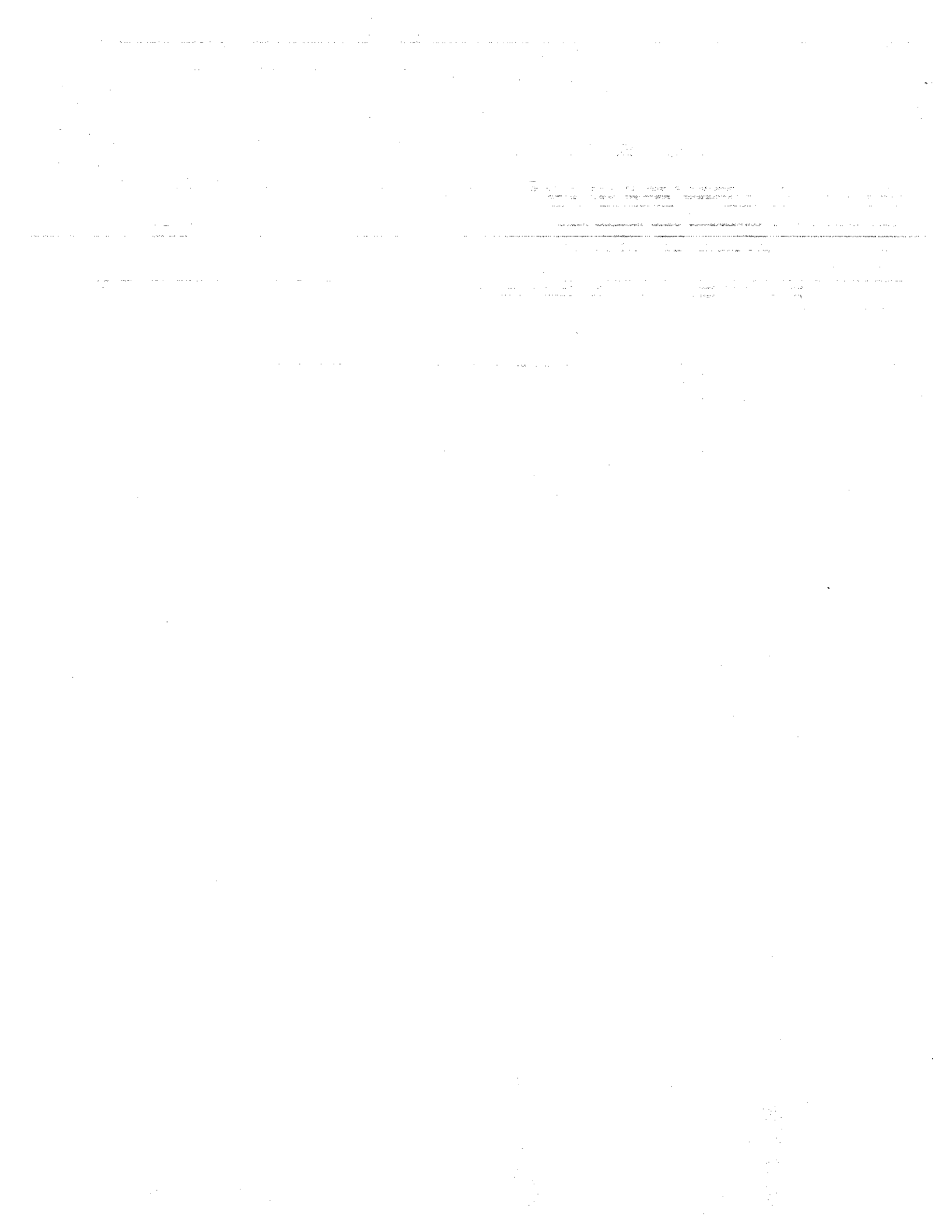
ENI®



A-1000
Power Amplifier

PRODUCT

MANUAL





OPERATION MANUAL

A-1000 Power Amplifier



HIGH RF VOLTAGES MAY BE PRESENT AT THE OUTPUT OF THIS UNIT. All operating personnel should use extreme caution in handling these voltages and be thoroughly familiar with this manual.



DO NOT USE ANY CFC (CHLOROFLUOROCARBON) SOLVENT IN THE MAINTENANCE OF THIS PRODUCT. In recognition of our responsibility to protect the environment, this product has been manufactured without the use of CFC's. The no-clean flux now used in all soldering operations may leave a small inert residue which will not affect the performance of the product. The use of CFC's for cleaning or maintenance may result in partial liquification of the no-clean flux residue, which will damage the unit and void the warranty.



This product is manufactured at ENI's Rochester NY plant, an ISO 9001 Quality System Certified Facility.

Notice

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Revision Level: A

Manual Order Number: A1000-TM

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Warranty

ENI warrants to the original purchaser for a period of one year from the date of delivery, each instrument to be free from defects in materials and workmanship. For a period of one year, ENI will, at its option, adjust, repair, or replace defective parts, without charge to the original purchaser, so that the instrument performs according to its specifications.

When warranty service is required, the instrument must be returned, transportation prepaid, to the factory or to one of ENI's designated service centers. If, in our opinion, the instrument has been damaged by accident, unreasonable use, buyer-supplied software or interfacing, improper site preparation or maintenance, or abnormal conditions of operation, repairs will be billed at standard rates. In this case, an estimate will be submitted before the work is started.

THIS LIMITED WARRANTY IS EXCLUSIVE AND ENI MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, AND ALL OTHER EXPRESS ORAL OR WRITTEN WARRANTIES AND ALL WARRANTIES IMPLIED BY LAW, INCLUDING ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHER WARRANTY OF QUALITY ARE EXCLUDED AND DISCLAIMED. IN NO EVENT SHALL ENI BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM BREACH OF ANY WARRANTY, WHETHER EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR FROM ANY CAUSE WHATSOEVER, INCLUDING NEGLIGENCE. Buyer's sole and exclusive remedy under this warranty shall be repair or replacement as set forth above, or if ENI is unable to repair or replace the defective part within a reasonable time, a refund of the price of the part or goods which give rise to the warranty claim.

Service And Technical Assistance

For Service or Repair contact the closest Customer Service Department with the following information:

- Model and serial number
- Purchase order number
- Detailed description of malfunction
- Your company's "Bill To" and "Ship To" address

You will receive a RMA (Return Materials Authorization) number, the warranty status of the unit to be returned and estimated repair charge, if any. The RMA number is your authorization number. Please type this number on your purchase order and shipping label. After ENI receives the unit, a firm quote and estimated date of completion will be given.

For Technical Assistance for your particular application, contact the nearest ENI Sales and Service Center. The following information will help us provide you with prompt and efficient service:

- All of the information contained on the unit's name plate.
- Names and telephone numbers of important contacts.
- Detailed description (i.e. physical damage and/or performance anomalies, quantitative and/or qualitative deviation from specifications), including miscellaneous symptoms, dates and times.
- The environment and circumstances under which the issue developed
- Supporting test data and/or records that can be provided.
- Any previous, related conversations and/or correspondence with ENI.

Sales & Service Locations

ROCHESTER, NY

A Division of
Astec America, Inc.
100 Highpower Road
Rochester, NY 14623

Tel: (716) 292-7440
Fax: (716) 427-7839
Svc: (716) 292-7478

FREMONT, CA

48834 Kato Road,
Suite 110A
Fremont, CA 94538

³⁵³
Tel: (510) ~~343~~ 4ENI (4364)
Fax: (510) ~~343~~ 4360
³⁵³

AUSTIN, TX

8403 Cross Park Drive
Suite 3A
Austin, TX 78754

Tel: (512) 339-8949
Fax: (512) 339-8940

**UNITED
KINGDOM**

Mundells Court,
Welwyn Garden City
Hertfordshire AL7 1EN
England

Tel: (0707) 371 558
Fax: (0707) 339 286

GERMANY

Sielminger Str. 63
D-70771 Leinfelden-
Echterdingen (Stetten)
Stuttgart, Germany

Tel: (0711) 947 70 0
Fax: (0711) 947 70 25

JAPAN

541 Aoyogi Kunitachi
Tokyo 186
Japan

Tel: (0425) 229 011
Fax: (0425) 222 636

TAIWAN

No. 15, Lane 24,
Ming Hsiang 1 Street
Hsinchu 300, Taiwan

Tel: (35) 787 762
Fax: (35) 787 760

THE HISTORY OF THE UNITED STATES

The history of the United States is a story of growth and change. From the first settlers to the present day, the nation has evolved through various stages of development. The early years were marked by exploration and the establishment of colonies. The American Revolution led to the birth of a new nation, and the subsequent years saw the expansion of territory and the growth of industry.

The American Civil War was a pivotal moment in the nation's history, leading to the abolition of slavery and the strengthening of the federal government. The Reconstruction era followed, a period of rebuilding and reform. The late 19th and early 20th centuries saw the rise of industrialization and the emergence of a new social order.

The 20th century was a time of great change and challenge. The United States emerged as a world superpower, leading the world in the development of nuclear energy and space exploration. The civil rights movement of the 1950s and 1960s brought about significant social and political reforms. The Vietnam War and the Watergate scandal were major events that shaped the nation's history.

The end of the 20th century and the beginning of the 21st century have seen the United States continue to evolve. The September 11 attacks and the War on Terror were defining moments of the early 2000s. The 2008 financial crisis and the 2016 presidential election were other major events that have shaped the current landscape of the United States.

The future of the United States is uncertain, but the nation's history suggests that it will continue to be a land of opportunity and innovation. The challenges ahead are great, but the American spirit of resilience and determination offers hope for a bright future.

The United States has a rich and diverse history, and it is this history that has shaped the nation into the world leader it is today. The lessons of the past are invaluable, and they will continue to guide the nation as it moves forward into the future.

The history of the United States is a story of a nation that has overcome many challenges and emerged as a global superpower. The American dream of a better life for all remains a guiding principle, and it is this dream that has inspired the nation's progress and growth.

The United States is a land of opportunity, and its history is a testament to the power of the American dream. The challenges ahead are great, but the American spirit of resilience and determination offers hope for a bright future.

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The United States is a land of opportunity, and its history is a testament to the power of the American dream. The challenges ahead are great, but the American spirit of resilience and determination offers hope for a bright future.

2.2 Installation Requirements

2.2.1 Electrical Inspection

The electrical performance of the Model A1000 should be verified as soon as possible after receipt. The following is a performance check that is suitable for incoming inspection:

1. Set the amplifier front panel power switch to the ON position and check that the pilot light illuminates and the fan motors are operating normally.
2. Perform the RF Output Power Test, Section 2.2.2 in Chapter S2, Maintenance and Calibration.

2.2.2 Cooling and Ventilation

When the A1000 is enclosed by an external cabinet, provisions must be made to ensure an adequate flow of cooling air to the unit. Ambient temperature of the air must not exceed 40°C.

2.2.3 Power Requirements

This unit requires a 50 to 60 Hz 3 ϕ power source with a fused capacity of 30A. The unit must be adjusted to accommodate the available AC line voltage. This is accomplished by moving the AC line jumpers to the correct terminals of Terminal Block TB3. See Table 2.2.3.

Note: *The A1000 is normally shipped from the factory with TB3 set for 208V 3 ϕ "Δ" operation unless otherwise specified.*

1. To locate Terminal TB3, remove the front panel by removing the eight #6-32 screws from the bottom front panel. TB3 is located directly behind this lower front panel.
2. Disconnect the linecord from the power main when adjusting the operating voltage.

| Line Voltage | Black Jumpers | | | | X | Y | Z | Fan | Leads |
|----------------|---------------|----|------|----|----|----|---|-----|-------|
| | From | To | From | To | | | | | |
| 240VAC 3Ø | 1 | 18 | 3 | 4 | 18 | 13 | 7 | 1 | 2 |
| | 6 | 7 | 9 | 10 | | | | | |
| | 12 | 13 | 15 | 16 | | | | | |
| 230VAC 3Ø | 2 | 18 | 3 | 4 | 18 | 14 | 8 | 10 | 12 |
| | 6 | 8 | 9 | 10 | | | | | |
| | 12 | 14 | 15 | 16 | | | | | |
| 220VAC 3Ø | 2 | 18 | 3 | 5 | 18 | 14 | 8 | 11 | 12 |
| | 6 | 8 | 9 | 11 | | | | | |
| | 12 | 14 | 15 | 17 | | | | | |
| 208V 3Ø "Δ" | 1 | 4 | 3 | 6 | 13 | 7 | 4 | 10 | 12 |
| | 7 | 10 | 9 | 9 | | | | | |
| | 13 | 16 | 6 | 12 | | | | | |
| | | | 12 | 15 | | | | | |
| | | | 15 | 18 | | | | | |
| 190V 3Ø "Δ" | 2 | 5 | 3 | 6 | 14 | 8 | 5 | 11 | 12 |
| | 8 | 11 | 6 | 9 | | | | | |
| | 14 | 17 | 9 | 12 | | | | | |
| | | | 12 | 15 | | | | | |
| | | | 15 | 18 | | | | | |

Line Voltage Connections
(Numbers indicate TB3 Terminals)

Table 2.2.3

CAUTION!

Failure to connect the AC line jumpers to the correct TB3 terminals may result in severe damage to the instrument.

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TABLE OF CONTENTS

General Information

Chapter 1 Safety

| | | |
|-------|--|-----|
| 1.1 | Recommended General Operating Practices..... | 1-1 |
| 1.2 | Labels | 1-2 |
| 1.2.1 | Important Operating or Maintenance Cautions..... | 1-2 |
| 1.2.2 | Shock Hazard Warnings | 1-2 |
| 1.2.3 | Service..... | 1-3 |
| 1.2.4 | Name Plate | 1-3 |

Chapter 2 System Installation

| | | |
|-------|--------------------------------|-----|
| 2.1 | Initial Inspection | 2-1 |
| 2.1.1 | Mechanical Check..... | 2-1 |
| 2.1.2 | Claim for Damage..... | 2-1 |
| 2.1.3 | Packaging for Reshipment..... | 2-1 |
| 2.2 | Installation Requirements..... | 2-2 |
| 2.2.1 | Electrical Inspection | 2-2 |
| 2.2.2 | Cooling and Ventilation..... | 2-2 |
| 2.2.3 | Power Requirements..... | 2-3 |

Chapter 3 A-1000 Operation

| | | |
|-------|------------------------------------|-----|
| 3.1 | Front and Rear Panel Devices | 3-1 |
| 3.1.1 | RF Output Meter | 3-1 |
| 3.1.2 | Circuit Breaker..... | 3-1 |
| 3.1.3 | Input Connector..... | 3-1 |
| 3.1.4 | Output Connector..... | 3-1 |
| 3.1.5 | AC Ground | 3-2 |
| 3.1.6 | Line Cord..... | 3-2 |
| 3.2 | Operating Procedure..... | 3-2 |
| 3.3 | Operating Precautions..... | 3-2 |

| | | |
|---------------|-----------------------------|------------|
| A-1000 | Specifications | 3-5 |
|---------------|-----------------------------|------------|

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General Information

The ENI Model A-1000 is a solid-state amplifier which has a flat frequency response from .3Hz to 35MHz. It provides 1000W of linear power with low harmonic and intermodulation distortion. Gain is 60dB nominal with a variation of less than ± 1.5 dB over the entire frequency range. Input and output impedance is 50Ω and the unit may be driven to full power output by most RF synthesizers, signal generators and swept signal sources.

The A-1000 is unconditionally stable. Any combination of input and output impedances can be connected to the amplifier without causing damage or oscillation.

The ENI Model A-1000 will deliver its rated power output into any load impedance regardless of match. Built-in protection circuitry will absorb the power reflected from a mismatched load without causing failure or oscillation. Load mismatch will cause RF power to reflect back to the amplifier. The unit is designed to withstand 100 percent reflected power. A pure reactance, open or short circuit load will cause 100 percent reflected power continuously without damage.

Output RF voltage is displayed on the front panel meter. Its integral power supply and cooling operate from 208V 3 ϕ WYE or 240V 3 ϕ Delta 50/60Hz main supply.

The Model A-1000 will raise the power level of signal sources and generators without requiring tuning or bandswitching. The Class A linear circuitry will amplify signals of AM, FM, SSB, TV and complex modulations limited only by their peak input and bandwidth with minimum distortion. This model is capable of increasing the output of any signal generator, frequency synthesizer, sweep generator or laboratory signal source from .3MHz to 35MHz.

Please consult Appendix I of this manual for a complete list of specifications.

This manual is divided into three chapters and two appendices. Please read the following descriptions provided to help you locate information you need in order to understand your amplifier's capabilities.

| | |
|-------------------|--|
| Chapter 1 | Deals with precautionary details. Please read this section if you are unfamiliar with the A-1000 or ENI's warranty procedures. |
| Chapter 2 | Tells you how to install and power up the unit for the first time. |
| Chapter 3 | Describes operational details of the A-1000. |
| Appendix 1 | Formal Specifications |

Chapter 1

Safety

It is essential that the user become thoroughly familiar with the contents of this manual prior to using this amplifier. If used properly, the information contained in this manual will not only promote reliable amplifier performance but will also encourage a safe operating environment for both the user and those around him.

1.1 *Recommended General Operating Practices*

1. Never work alone.
2. It is preferable that operating personnel be proficient in the following:
 - Knowledge of all local circuit breaker locations and certainty of clear access to those locations
 - Manual operation of all local circuit breakers
 - Cardiopulmonary Resuscitation (CPR)
 - Knowledge of all local emergency telephone numbers and the location of the nearest telephone
 - Knowledge of proper operation of the nearest Class ABC fire extinguisher and certainty of clear access to it.
3. Never use equipment that is mechanically unstable.
4. Never trust anyone's word that the power is off.
5. Never trust anyone's word that the RF ground return is connected.
6. Never wear jewelry or loose clothing.
7. Never work on live circuits.
8. Always keep one hand behind your back.
9. Always ground your forearm before touching components with your hand.
10. Always seek medical attention if you incur an electrical shock, regardless of the absence of any symptoms.

1.2 Labels

Labels are provided to alert operating and service personnel to conditions that may cause personal injury or damage to the equipment from misuse or abuse. Please read the labels and understand their meaning.

1.2.1 Important Operating or Maintenance Cautions

CAUTION !

The caution label is used in this manual, to caution the reader to important operating or maintenance instructions which could adversely affect the equipment reliability.

1.2.2 Shock Hazard Warnings

WARNING 

The warning label is used in this manual to warn the reader of a procedure or practice which could result in personal injury if not followed carefully.

1.2.3 Service

CAUTION !

WARNING 

ENI is responsible for safety, reliability, and performance of the equipment only if:

- *Assembly operations, extensions, readjustments, modifications, or repairs are carried out by authorized personnel.*
- *The electrical installation is made in accordance with the installation instructions provided and the room in which the equipment is installed complies with the environmental requirements.*
- *The equipment is used in accordance with the instructions for use.*

1.2.4 Name Plate

The A-1000 can be identified by a name plate at the rear of the unit and contains the following information.

A. Manufacturer:

ENI
Rochester, NY USA

B. Model:

The assembly number which uniquely identifies product configuration is contained on this line.

C. Serial #:

This line contains a number which is sequentially assigned as the product is manufactured.

D. Revision:

The revision letter identifying product configuration is contained on this line. Revision A is the initial revision level.

E. This line contains customer name and customer identification number.

F. Date:

Proper identification of the date of manufacture is contained on this line.

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Chapter 2

System Installation

2.1 Initial Inspection

2.1.1 Mechanical Inspection

If damage to the shipping carton is evident, request the carrier's agent be present when the unit is unpacked. Check for equipment damage and inspect the cabinet and panels for dents and scratches.

2.1.2 Claim for Damage

Please notify ENI directly or your authorized ENI representative if the (Product) is mechanically damaged or fails to meet specifications upon receipt. Retain our shipping carton and packing material for the carrier's inspection as well as for subsequent use to return the unit should this become necessary.

2.1.3 Packaging for Reshipment

Whenever possible, the original shipping carton and packing material should be used for reshipment. If the original packing material is not available, wrap the instrument in heavy paper or plastic. Use a strong shipping container. If a cardboard carton is used, it should be at least 200 lbs. test material.

Use shock-absorbing material around all sides of the instrument to provide a firm cushion and to prevent movement inside the container wall on each side. Protect the front panel by means of cardboard spacers inserted between the front panel and the shipping carton. Make sure that the instrument cannot move in the container during shipping. Seal the carton with a good grade of shipping tape and mark the container: **FRAGILE ELECTRONIC INSTRUMENT.**

CAUTION !

Drain water before shipment.

2.2 Installation Requirements

2.2.1 Electrical Inspection

The electrical performance of the Model A-1000 should be verified as soon as possible after receipt. The following is a performance check that is suitable for incoming inspection:

1. Set the amplifier front panel power switch to the ON position and check that the pilot light illuminates and the fan motors are operating normally.
2. Perform the RF Output Power Test, Section 2.2.2 in Chapter S2, Maintenance and Calibration.

2.2.2 Cooling and Ventilation

When the A-1000 is enclosed by an external cabinet, provisions must be made to ensure an adequate flow of cooling air to the unit. Ambient temperature of the air must not exceed 40°C.

2.2.3 Power Requirements

This unit requires a 50 to 60 Hz 3 ϕ power source with a fused capacity of 30A. The unit must be adjusted to accommodate the available AC line voltage. This is accomplished by moving the AC line jumpers to the correct terminals of Terminal Block TB3. See Table 2.2.3.

Note: *The A-1000 is normally shipped from the factory with TB3 set for 208V 3 ϕ "Y" operation unless otherwise specified.*

1. To locate Terminal TB3, remove the front panel by removing the eight #6-32 screws from the bottom front panel. TB3 is located directly behind this lower front panel.
2. Disconnect the linecord from the power main when adjusting the operating voltage.

| Line Voltage | Black Jumpers | | | | X | Y | Z | Fan Leads | |
|-----------------|---------------|----|------|----|----|----|---|-----------|----|
| | From | To | From | To | | | | | |
| 240VAC 3 ϕ | 1 | 18 | 3 | 4 | 18 | 13 | 7 | 1 | 2 |
| | 6 | 7 | 9 | 10 | | | | 10 | 12 |
| | 12 | 13 | 15 | 16 | | | | | |
| 230VAC 3 ϕ | 2 | 18 | 3 | 4 | 18 | 14 | 8 | 10 | 12 |
| | 6 | 8 | 9 | 10 | | | | | |
| | 12 | 14 | 15 | 16 | | | | | |
| 220VAC 3 ϕ | 2 | 18 | 3 | 5 | 18 | 14 | 8 | 11 | 12 |
| | 6 | 8 | 9 | 11 | | | | | |
| | 12 | 14 | 15 | 17 | | | | | |
| 208V 3 ϕ | 1 | 4 | 3 | 6 | 13 | 7 | 4 | 10 | 12 |
| | 7 | 10 | 8 | 9 | | | | | |
| | 13 | 16 | 8 | 9 | | | | | |
| | | | 12 | 15 | | | | | |
| | | | 15 | 18 | | | | | |
| "Y" | | | | | | | | | |
| 190V 3 ϕ | 2 | 5 | 3 | 6 | 14 | 8 | 5 | 11 | 12 |
| | 8 | 11 | 6 | 9 | | | | | |
| | 14 | 17 | 9 | 12 | | | | | |
| | | | 12 | 15 | | | | | |
| "Y" | | | | | | | | | |

**Line Voltage Connections
(Numbers indicate TB3 Terminals)**

Table 2.2.3

CAUTION !

Failure to connect the AC line jumpers to the correct TB3 terminals may result in severe damage to the instrument.

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Chapter 3

A-1000 Operation

This section outlines all connections and provides basic operating instructions, and precautions in Section 3.2. Before attempting operation, please familiarize yourself with all connections.

3.1 Front and Rear Panel Devices

3.1.1 RF Output Meter

An output meter is provided on the front panel to indicate the average output voltage (calibrated in r_{ms}) as well as the power output when the unit is connected to a 50Ω load. Since the meter responds only to average RF output voltage, the modulation characteristics of the input signal must be taken into account when interpreting the meter readings.

For example, the amplifier may be saturated during the ON position of the pulse, yet the meter reading will be low due to the low duty cycle of the pulse input.

Note: *The voltage pick-off is mounted directly behind the rear panel at the output connector.*

3.1.2 Circuit Breaker

The circuit breaker is also located on the front panel. In the ON position, fans and the power supply are connected to the main power source.

3.1.3 Input Connector

Located on the back panel, this Type 'N' connector provides connection of the driving generator. Input impedance is 50Ω . No more than 0.3V is required to obtain saturated output. Up to 1.4V peak can be supplied without causing damage. However, no additional power output can be expected.

3.1.4 Output Connector

Located on the back panel, this Type 'N' connector allows connection of the amplifier output to the load.

3.1.5 AC Ground

Located on the back panel, AC Ground should be used to earth ground unit's case.

3.1.6 Line Cord

Located on the back panel, this four conductor cable contains three phases and ground.

3.2 Operating Procedure

To operate the ENI Model A-1000:

1. Refer to Section 2.2.3 to review all precautions.

CAUTION !

Never connect the amplifier RF input to the amplifier RF output. This will cause oscillation and may damage the input pre-amplifier.

2. Using the rear panel Type 'N' connectors, connect the input to the signal source and the output to load.
3. Increase the input signal gradually while observing the output voltage on the output RF voltmeter. When the unit is connected to a 50Ω load the unit's CW power output may be read directly from the meter scale. When the unit is connected to an arbitrary or unknown load impedance, the following steps will ensure a low distortion power output.
 - a. Disconnect the output load cable from the unit's output Type 'N' connector.
 - b. If the CW output voltage is less than $300V_{rms}$ the unit is operating at low distortion, regardless of the load impedance.
 - c. Reconnect the output of the amplifier to the load.

Note: *If the output of the amplifier is monitored by a high frequency oscilloscope or spectrum analyzer, the input signal may be increased until the point of maximum undistorted power output is observed.*

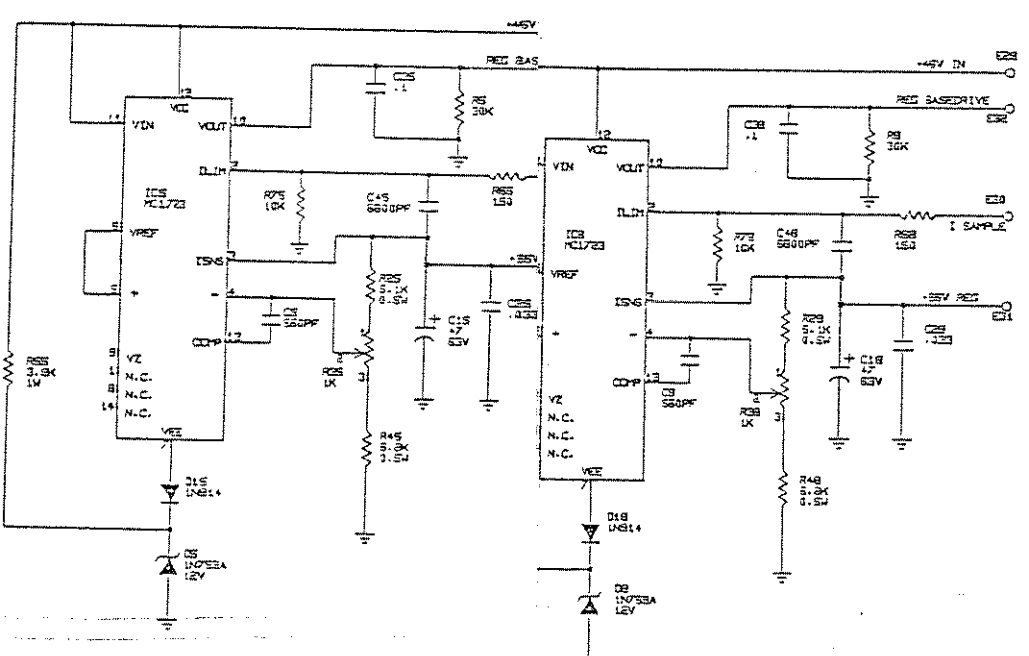
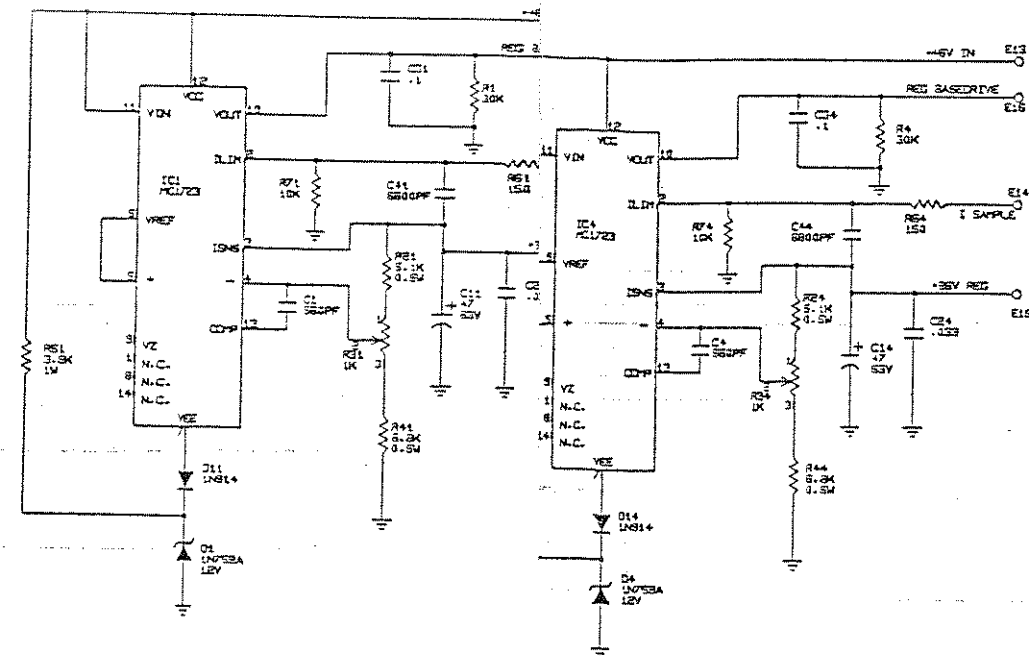
3.3 Operating Precautions

1. The A-1000 is completely protected against damage due to load mismatch, provided that the input RF level does not exceed $1V_{rms}$ or 1.4V peak. If the attached signal source is capable of generating substantially more than this input voltage please use caution in adjusting it. The unit will saturate well before the maximum input voltage and thus, there will be no increase in the output power at this point.
2. The unit should not remain connected to an antenna when the unit is not in use. If thunderstorms are likely, earth ground the unit's case.
3. When the input signal voltage of the signal source is unknown, insert an attenuator between it and the A-1000 input.
4. An output meter is provided to indicate the average output voltage (calibrated in rms) as well as the power output when the unit is connected to a 50Ω load. Since the meter responds only to average output the modulation characteristics of the input signal must be taken into account when interpreting the meter readings. For example, the amplifier may be saturated during the ON position of the pulse yet the meter reading will be low due to the low duty cycle of the pulse input.

A-1000 Specifications

| | |
|---|---|
| Frequency | 300kHz to 35MHz |
| Gain | 60dB |
| Gain Variation | ±1.5dB |
| Maximum Linear Power Output | 1000W |
| Harmonic Distortion | All harmonics greater than 25dB below fundamental at 800W. Lower at reduced power. |
| Typical 3rd Order Intermodulation Intercept Point | +69dBm |
| Input/Output Impedance | 50Ω |
| Input VSWR | Less than 1.5:1 |
| Output VSWR | Less than 4.5:1 |
| Noise Figure | 12dB Maximum |
| Stability | Unconditionally stable; unit will not oscillate for any condition of load and source impedance. |
| Protection | Unit will withstand more than 13dB of overdrive (input signal of 1V _{rms}) for all output load conditions. |
| Output Metering | Average reading voltmeter calibrated in _{rms} volts for a sine wave with an accuracy of ±5% of full scale (0-300V; also calibrated in Watts into 50Ω (0-1800). |
| Power Requirements | 208/240V 3ø tap selected, ±5% 50-60Hz at approximately 22A per phase. |
| Operating Temperature | 0° to 40° C. |
| Size | 52 1/2 x 16 3/4 x 21 1/2" (133.4 x 42.5 x 54.6cm) |
| Weight | 370 lbs. (167.8kg.) |
| Connectors | Type 'N' |

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NOTES:

1. UNLESS OTHERWISE SPECIFIED,
 - A. ALL RESISTOR VALUES ARE IN OHMS. 1/4W.
 - B. ALL CAPACITOR VALUES ARE IN MICROFARADS
2. LAST DESIGNATOR USED: D19 E32 I09 R76
3. DESIGNATORS NOT USED: D9-10, C9-10, D18-E1, C39-40, D2-13, R9-10, R33-30, R39-40, R49-

ELECTRONIC NAVIGATION INDUSTRIES INC.
 100 HIG-POWER ROAD
 ROCHESTER, NEW YORK 14623 (716)427-9300

| | | |
|--------------------|---------------------------|--------------------------|
| JIM YATES | DESCRIPTION | REV A |
| 1100790 | SCHMATIC DIAGRAM | |
| N JIM YATES | A1000 POWER SUPPLY REG 80 | Dwg. NO. A1000-SCH-01 |
| <i>[Signature]</i> | | |
| <i>[Signature]</i> | | |
| AMC: 4180231A.GED | 8-EST 1 OF 1 | |

Glossary of Abbreviations

| | |
|------------|----------------------|
| A | Amperes |
| AMP | Amperes |
| ASSY | Assembly |
| BR | Bridge |
| CAP | Capacitor |
| CER | Ceramic |
| DESIG | Designation |
| ELECT | Electrolytic |
| FWD | Forward |
| IC | Integrated Circuit |
| K | Kilohms |
| k Ω | Kilohms |
| mV | Millivolts |
| pF | Picofarad |
| PIV | Peak Inverse Voltage |
| PWR | Power |
| POT | Potentiometer |
| REF | Reference |
| REQ | Required |
| RFL | Reflected |
| RES | Resistor |
| S.B. | Slow Blow |
| μ F | Microfarad |
| μ F | Microfarad |
| μ H | Microhenry |
| μ H | Microhenry |
| V | Volts |
| VDCW | DC Working Voltage |
| W | Watts |
| WW | Wire Wound |

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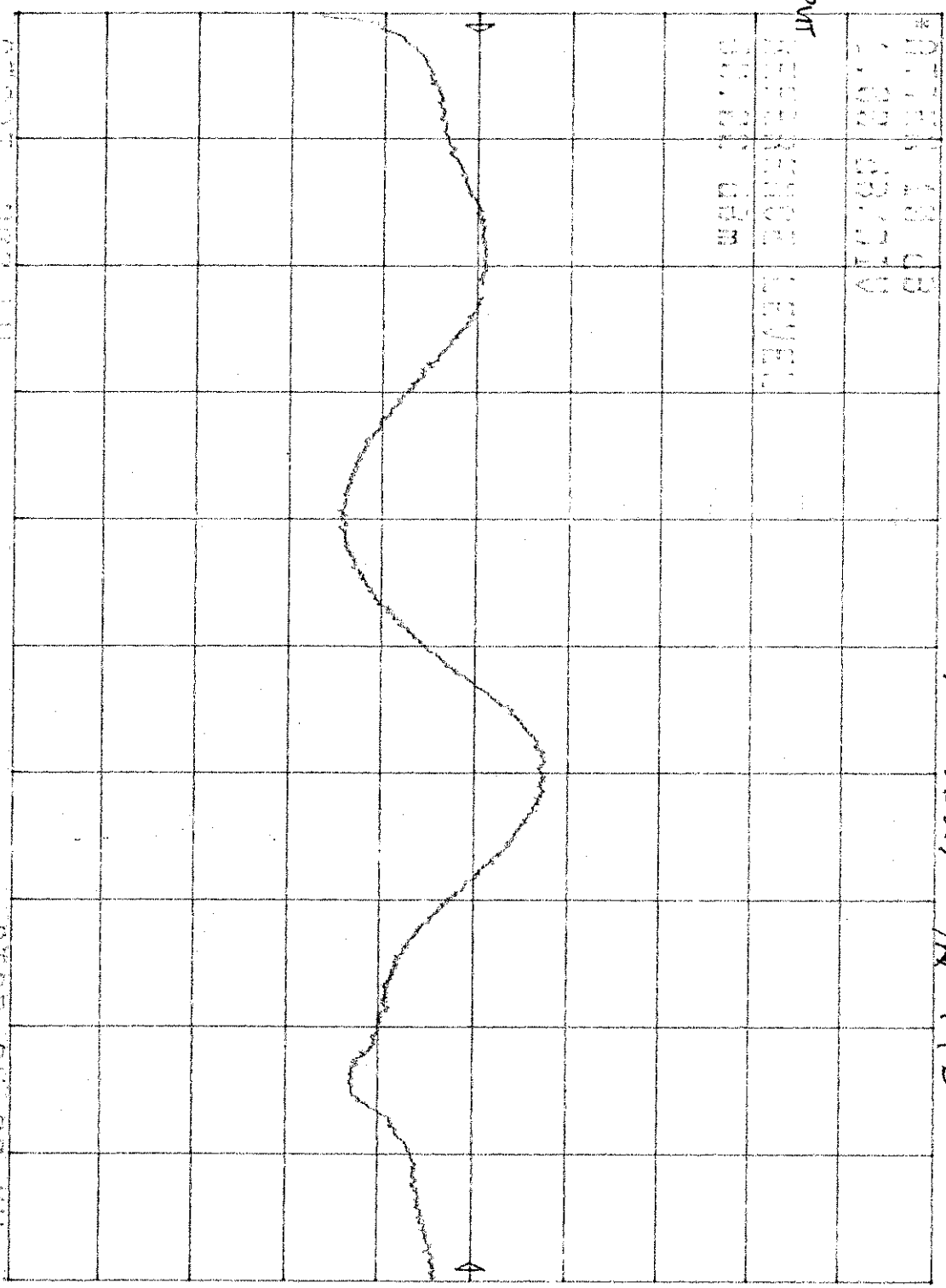
*RL 50.00 dBm ENI A1000 %W 202527 S/M 219D

*0.786 48 dB
1.00 49.710

-2 DBM INPUT

KAZN →

~600 WATTS



START 24.0 KHz STOP 25.00 MHz
*88 20.0 KHz *89 20.0 KHz ST 1.042 sec

