



# Nakamichi CA-5

Control Amplifier

Owner's Manual



**CAUTION**  
RISK OF ELECTRIC  
SHOCK. DONTOPEN!



### CAUTION

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions, in the literature accompanying the appliance.

## WARNING

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- reorient the receiving antenna
- relocate this equipment with respect to the receiver
- move this equipment away from the receiver
- plug this equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Congratulations!

You have chosen a truly outstanding product. The Nakamichi CA-5 is a control amplifier designed for the true audiophile—the purist who will accept nothing but the very best when it comes to performance. Only features essential for high-fidelity performance are included, with total emphasis placed on perfect sound reproduction. To achieve this aim, no efforts were spared. High-impedance field-effect transistors serve as input devices for every block, to ensure exceptional signal-to-noise ratio. Only carefully selected highest-quality components are used throughout, to eliminate all possible sources of distortion.

In order to take full advantage of this unit's superior performance, please read this manual in its entirety and retain it for future reference.

Thank you.

Nakamichi Corporation.

Please record the Model Number and Serial Number in the space provided below and retain these numbers.

Model Number and Serial Number are located on the rear panel of the unit.

Model Number: CA-5

Serial Number: \_\_\_\_\_

## Safety Instructions

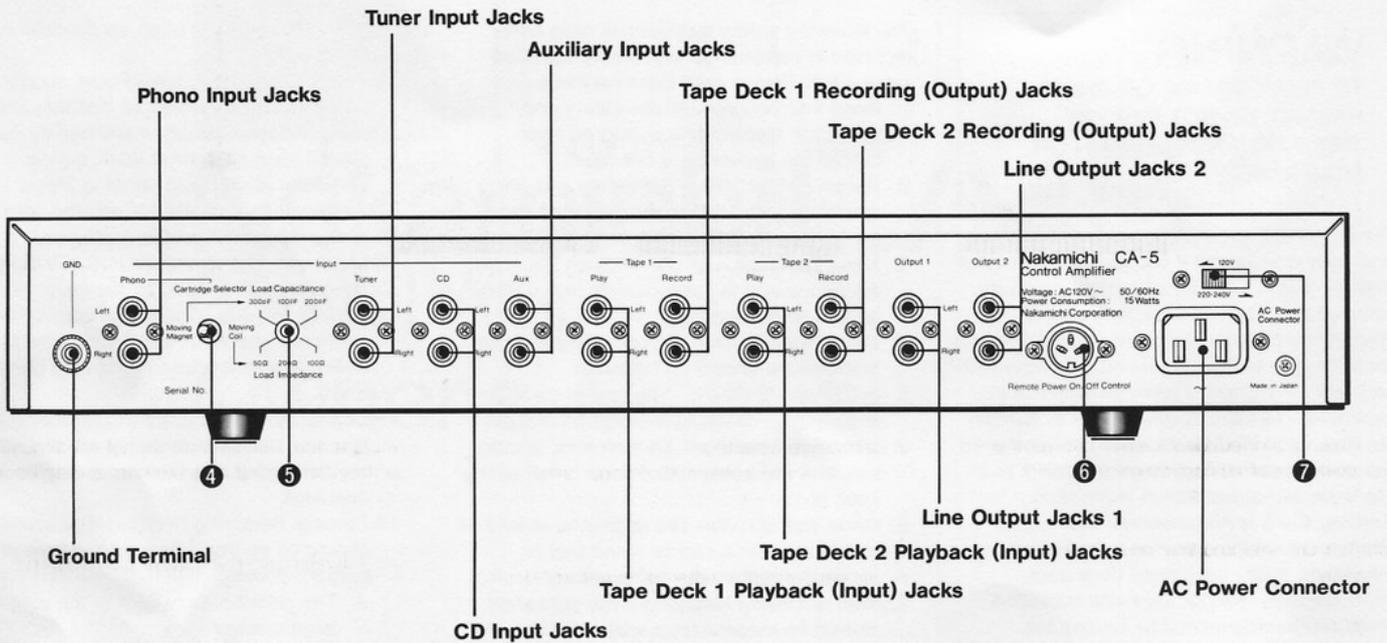
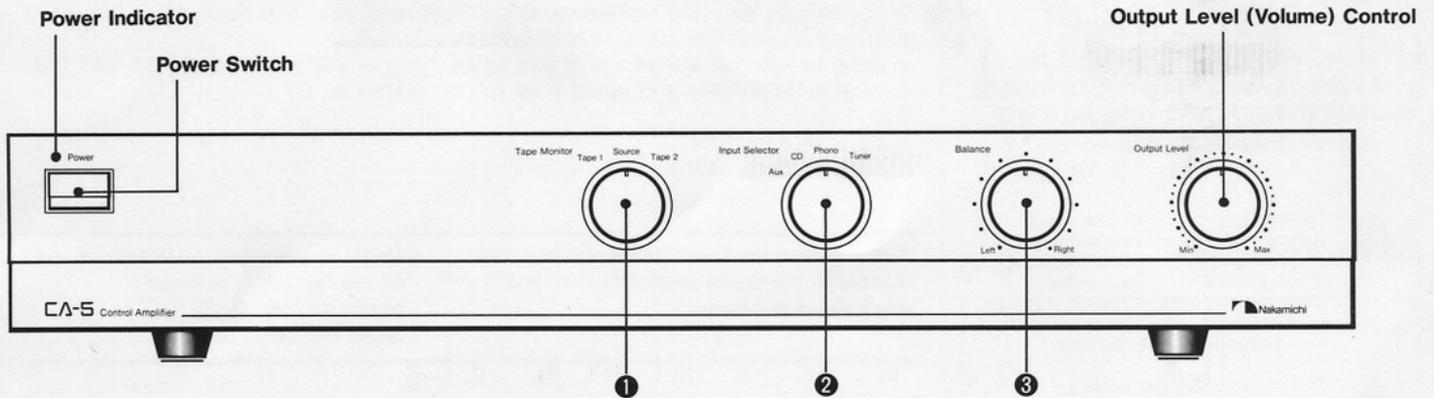
The following safety instructions have been included in compliance with safety standard regulations. Please read them carefully.

1. Read Instructions—All the safety and operating instructions should be read before the appliance is operated.
2. Retain instructions—The safety and operating instructions should be retained for future reference.
3. Heed Warnings—All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow Instructions—All operating and use instructions should be followed.
5. Water and Moisture—The appliance should not be used near water—for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
6. Carts and Stands—The appliance should be used only with a cart or stand that is recommended by the manufacturer.
7. Wall or Ceiling Mounting—The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation—The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug or similar surface that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat—The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) which produce heat.
10. Power Sources—The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization—Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power-Cord Protection—Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning—The appliance should be cleaned only as recommended by the manufacturer.
14. Nonuse Periods—The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. Object and Liquid Entry—Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. Damage Requiring Service—The appliance should be serviced by qualified service personnel when:
  - A. The power-supply cord or the plug has been damaged; or,
  - B. Objects have fallen, or liquid has been spilled into the appliance; or,
  - C. The appliance has been exposed to rain; or,
  - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or,
  - E. The appliance has been dropped, or the enclosure damaged.
17. Servicing—The user should not attempt to service the appliance beyond that described in the operating instruction. All other servicing should be referred to qualified service personnel.

### Caring for the Exterior Panels

Caring for the exterior panels of the unit should be limited to wiping with a soft, dry cloth. Avoid using solvents or alcohol-based cleaners.

# Controls and Features



## (1) Tape Monitor Switch

**Tape 1:** For playback of a tape deck connected to the Tape 1 jacks.

**Tape 2:** For playback of a tape deck connected to the Tape 2 jacks.

**Source:** To listen to the program source chosen with the Input selector.

## (2) Input Selector

Serves to select one of the program sources connected to the CA-5: tuner, turntable, CD player, etc.

## (3) Balance Control

Serves to adjust left/right speaker balance.

## (4) Cartridge Selector

Set this switch to the correct position for the type of phono cartridge in use.

## (5) Cartridge Load Selector

When a moving-magnet cartridge is used, this switch selects the termination capacitance. With moving-coil cartridges, the switch controls the load impedance.

## (6) Terminal for Remote Power On/Off Switching

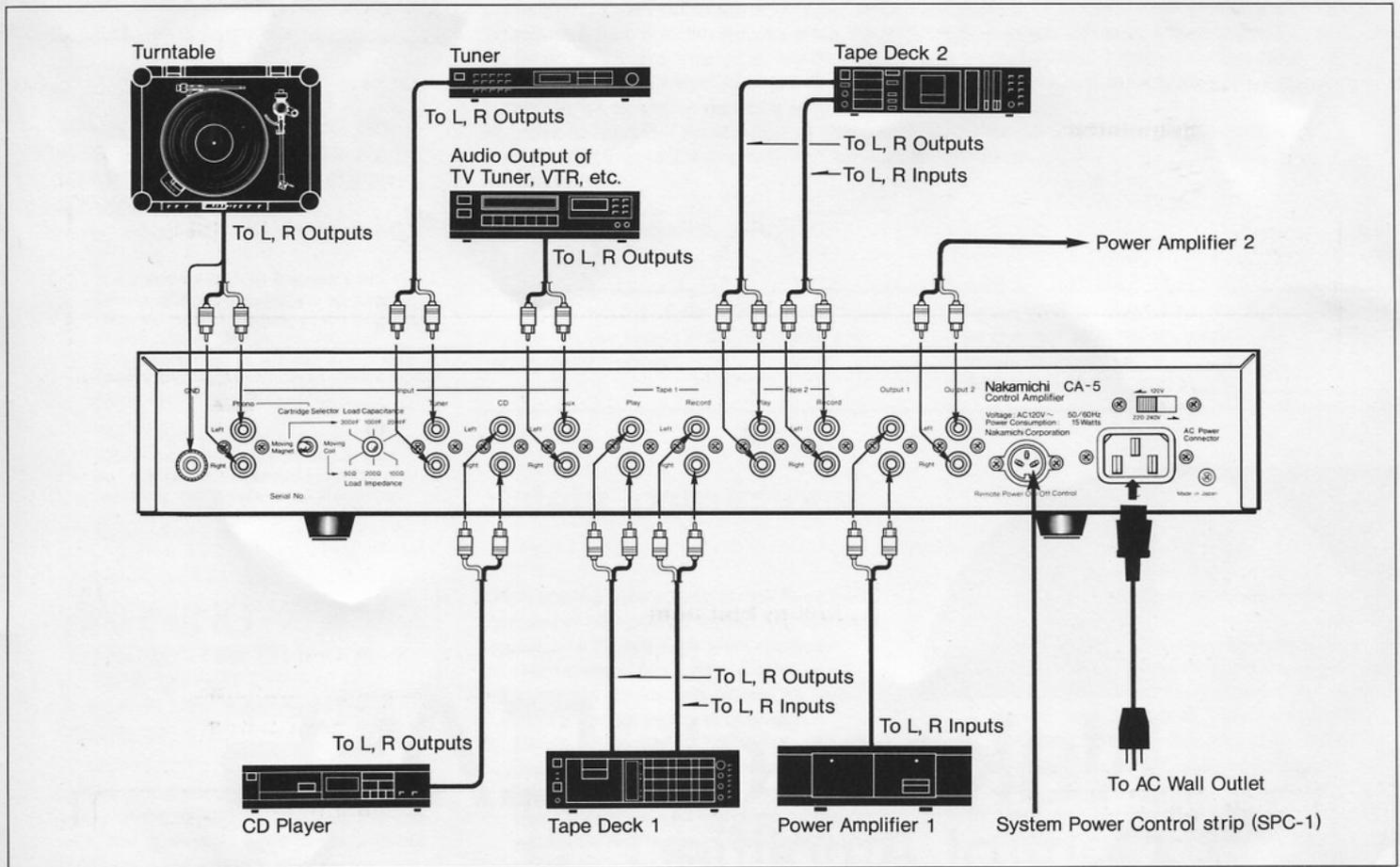
Connect the optional System Power Control strip (SPC-1) to this terminal.

## (7) Voltage Selector

AC voltage is factory set for the country in which you purchased your unit. The voltage selector permits re-setting of mains voltage in case the unit is to be used in a different country.

**Note:** Safety regulations in certain countries prohibit inclusion of a voltage selector. This feature, therefore, may be absent from your unit.

# Connections



Establish connections to other system components as shown in the above example. While making connections, be sure to set the power switches of all components to "OFF".

- For easy identification, the upper row of all input and output jacks of this unit serves the left channel and the lower row the right channel.

## Turntable Connections

Connect the ground lead from the turntable to the Ground (GND) terminal of this unit.

### ■ Cartridge Selector

The Cartridge selector switch on the rear panel of this unit must be set to the correct position, depending on the type of phono pickup used.

**Moving Magnet:** For moving-magnet (MM) type cartridges (including the so-called MI, IM and VM types), as well as for high-output moving-coil cartridges with a recommended load impedance of 300 ohms or more.

**Moving Coil:** For moving-coil type cartridges with a recommended load impedance of less than 300 ohms.

- Never use a moving-magnet cartridge with the selector set to the "Moving Coil" position, as this will result in severe distortion and possible damage to this unit

and to the loudspeakers.

### ■ Cartridge Loading

This unit incorporates a Cartridge Load selector to ensure optimum termination for best results with a wide range of phono cartridges.

When the Cartridge selector is set to "Moving Magnet", a choice of three different load capacitance values is provided (100 pF, 200 pF, or 300 pF). When the Cartridge selector is set to "Moving Coil", the load impedance can be switched in three steps (50, 100, or 200 ohms).

For moving-coil cartridges, choose the load impedance setting that corresponds most closely to the value recommended by the manufacturer of your cartridge. (That value is usually listed in the spec sheet.)

When determining the capacitance setting for moving-magnet cartridges, the so-called floating capacitance added by the connecting cables between the cartridge and this unit's Phono inputs must also be taken into consideration. As a rule of thumb, the desired capacitance can be found by subtracting the cable capacitance (approx. 100 pF for ordinary cables) from the recommended capacitance loading for your cartridge (usually listed in the spec sheet).

However, as the floating capacitance can vary

considerably depending on the type and length of cable involved (including tonearm wiring etc.), a final decision on the optimum position of the Cartridge Load selector should be made by ear.

Always turn the Output Level control fully down before operating the Cartridge selector and Cartridge Load selector, to protect the loudspeakers from damage.

## Tape Deck Connections

This unit provides two sets of recording outputs and playback inputs for connection of two tape recorders. Connect the output terminals of a tape deck to this unit's Tape Playback jacks (1 or 2), and the input terminals of a tape deck to this unit's Tape Recording jacks (1 or 2).

## Power Amplifier Connections

This unit provides two sets of line outputs, so that two power amplifiers can be driven simultaneously, if desired. Since exactly the same signal is supplied at these outputs, either set can be chosen when only one power amplifier is used. **Never** insert any shorting

# Operation

plugs or the like into the other set of line output jacks, as this can cause damage to the unit.

## Power Supply Connections

Confirm that this unit's Power switch is set to "Off". Then insert the supplied power cord into the AC Power connector on the rear panel of this unit and plug the other end into an AC wall outlet.

After all system connections are completed, make sure that this unit's Output Level control is turned to minimum. Then set this unit's Power switch to "On" and finally turn on the power amplifier. Leave the Output Level control of the CA-5 at minimum until the switch-on muting interval of the power amplifier is terminated.

### ■ Use of the System Power Control strip SPC-1

By connecting the optional System Power Control strip (SPC-1) to the terminal for Remote Power On/Off Switching on the rear panel of this unit, AC power to other system components can be controlled by the Power switch of the CA-5. For details, please refer to the instructions supplied with the SPC-1.

Before operating the unit, make sure that the Output Level control is fully turned to minimum. For a brief period (approx. 3 seconds) after power to this unit is switched on, the output of the CA-5 remains muted and no sound will be heard, until all internal circuits have stabilized.

## Record Playback

Set the Input selector to "Phono" and the Tape Monitor switch to "Source". Then operate the turntable. After the stylus was lowered onto the record, turn up the Output Level control of this unit to obtain the desired listening volume. If required, establish correct left/right balance with the Balance control.

- To protect the loudspeakers from possible damage, always turn the Output Level control fully to minimum when lowering or lifting the stylus.

## Listening to Other Program Sources (CD Player, Tuner, etc.)

Set the Input selector to "CD", "Tuner" or "Aux", as required, and set the Tape Monitor switch to "Source". Then operate the CD player, tuner or other component. Set the

desired volume level and balance with the Output Level and Balance controls of the CA-5.

## Recording and Playback With a Tape Deck

For playback of a tape, set the Tape Monitor switch to "Tape 1" or "Tape 2", as required. For recording on a tape deck, select the desired program source with the Input selector and set the Tape Monitor switch of the CA-5 to "Source". Then set the tape deck to the record mode. The signal supplied to the tape deck is completely unaffected by the volume and balance settings of the CA-5.

- The signal from the program source chosen by the Input selector is always present at both sets of Tape Recording outputs. Recording can therefore also be carried out on two tape decks simultaneously.
- If the connected tape deck possesses three heads and monitoring capability, the quality of the actual recorded signal can be checked by setting the Tape Monitor switch of the CA-5 to "Tape 1" (or "Tape 2") during recording.

# Troubleshooting

Condition	Probable Cause	Remedy
No power.	1.AC cord not plugged properly into AC Power connector of this unit or AC wall outlet. 2.Internal AC line fuse has blown.	1.Plug in AC cord firmly. 2.Contact an authorized service station.
No sound.	3.Faulty connections of RCA-type plugs, shielded cables between components, or speaker cables. 4.Input selector or Tape Monitor switch not set correctly. 5.Power amplifier at fault (protection circuits are operating, etc.).	3.Check connections. 4.Select correct positions. 5.Refer to Owner's Manual of power amplifier.
Left/Right channels reversed, no sound from one channel.	6.Faulty connections of RCA-type plugs, shielded cables between components, or speaker cables. 7.Balance control turned fully to one side.	6.Check connections. 7.Adjust Balance control.
Hum noise is heard during record playback.	8.Faulty or incomplete connections of RCA-type plugs. 9.Faulty or incomplete connection of ground cable. 10.Output cable from turntable routed close to AC power cord.	8.Insert plugs firmly. 9.Check ground connection. 10.Route AC power lines as far as possible from output cables and cartridge.
Low volume levels when using moving-coil cartridge.	11.Moving-coil cartridge with less than 300 ohms impedance used at "Moving Magnet" position. 12.Load impedance setting incorrect.	11.Set Cartridge selector to "Moving Coil". 12.Select proper load impedance for cartridge in use.

# Specifications

## Input Sensitivity/Impedance/MC Head Amp Gain

Phono MC (50 ohms)	48 $\mu$ V/50 ohms/34 dB
(100 ohms)	76 $\mu$ V/100 ohms/30 dB
(200 ohms)	170 $\mu$ V/200 ohms/23 dB
Phono MM	2.4 mV/47 kohms
Tuner/CD/Aux/Tape	200 mV/12.5 kohms

## Input Sensitivity (NEW IHF)

Phono MC (50 ohms)	12 $\mu$ V
(100 ohms)	19 $\mu$ V
(200 ohms)	42.5 $\mu$ V
Phono MM	0.6 mV
Tuner/CD/Aux/Tape	50 mV

## Maximum Input Level (1 kHz, Non Clipping Level, NEW IHF)

Phono MC (50 ohms)	3 mV
(100 ohms)	5 mV
(200 ohms)	11 mV
Phono MM	170 mV

## Output Level/Impedance

Pre Out	2 V/1 kohm
Rec Out	200 mV/1 kohm

## Maximum Output Level

(20—20,000 Hz, 1% THD, Pre Out, NEW IHF)  
..... 16 V

## Total Harmonic Distortion (20—20,000 Hz)

Phono MC to Rec Out, 1 V	
(50 ohms)	Less than 0.005%
(200 ohms)	Less than 0.004%
Phono MM to Rec Out, 1 V	Less than 0.002%
Tuner/CD/Aux/Tape to Pre Out, 2 V	
.....	Less than 0.002%

## Frequency Response

Tuner/CD/Aux/Tape	1.5—100,000 Hz +0, -3 dB
	20—20,000 Hz +0, -0.2 dB

## RIAA Deviation

Phono MM	30—20,000 Hz $\pm$ 0.25 dB (-0.5 dB at 20 Hz)
Phono MC	40—20,000 Hz $\pm$ 0.25 dB (-0.7 dB at 20 Hz)

## Signal-to-Noise Ratio (IHF A-WTD)

Phono MC (0.5 mV Input, 0.5 V Pre Out, Input Shorted)	
(50 ohms)	Better than 78 dB
(100 ohms)	Better than 76 dB
(200 ohms)	Better than 72 dB
Phono MM (5 mV Input, 0.5 V Pre Out, Input Shorted)	
.....	Better than 81 dB
Tuner/CD/Aux/Tape (0.5 V Input, 0.5 V Pre Out, Input Shorted)	
.....	Better than 90 dB

## Stereo Separation

Phono MC (0.5 mV Input, 1 V Pre Out, Input Shorted)	
100 Hz/1 kHz/10 kHz	
(50 ohms)	85/80/65 dB
(200 ohms)	80/77/62 dB
Phono MM (5 mV Input, 1 V Pre Out, Input Shorted)	
100 Hz/1 kHz/10 kHz	92/84/66 dB
Tuner/CD/Aux/Tape (0.5 V Input, 1 V Pre Out, Input Shorted)	
100 Hz/1 kHz/10 kHz	110/93/74 dB

## Remote Power On/Off Control Output

..... 26 V DC

Power Source..... 120, 120/220-240, 220 or 240 V  
AC; 50/60 Hz (According to  
country of sale)

Power Consumption..... 15 W max.

Dimensions ..... 435(W)  $\times$  63(H)  $\times$  289(D) mm  
17-1/8(W)  $\times$  2-1/2(H)  $\times$  11-3/8  
inches

Approximate Weight ..... 3.7 kg; 8 lbs., 3 oz.

• Specifications and design are subject to change for further  
improvement without notice.

## Nakamichi Corporation

Tokyo Office  
Shinjuku Daiichi Seimei Bldg.  
2-7-1 Nishishinjuku, Shinjuku-ku, Tokyo  
Phone (03) 342-4461  
Telex : 2324721 (NAKAM J)

## Nakamichi U.S.A. Corporation

19701 South Vermont Avenue  
Torrance, California 90502  
Phone : (213) 538-8150

## Nakamichi GmbH

Stephanienstrasse 6, 4000 Düsseldorf 1  
Phone : (0211) 359036