

*Luxman*

CONTROL AMPLIFIER

**C-700u**

*Owner's Manual*



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# Precautions



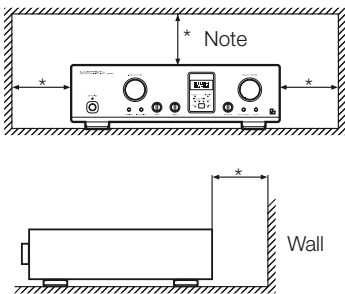
## Installation place

Install this unit in a location where good ventilation and heat radiation is assured.

Especially, installation of this unit where direct sunlight is present, where the temperature rises excessively high such as close to a heater, or where it is humid or dusty may cause a malfunction even if heat is efficiently released. Therefore, do not install this unit in such places.

### Note:

For heat dispersal, do not install this equipment in a confined space such as a book case or similar unit.



## Batteries

### Caution:

Batteries used for remote controller shall not be exposed to excessive heat such as sunshine, fire or the like.

## Repair and adjustment

When repair and adjustments are needed, please ask the dealer where you bought the unit.

## Cleaning

For cleaning, use a piece of soft cloth to wipe the unit such as cleaning cloth. When the dirt is hard to remove, use a small amount of neutral detergent to wipe, and then wipe the unit with dry cloth. Do not use a solvent like benzine or thinner because such a substance can often damage the exterior.

## Precautions in connecting with other components

When connecting this unit to input/output devices, be sure to turn off the power switches of this unit and all other connected units. Failure to observe this may generate a strong noise resulting in speaker damage or a malfunction.

The pin-plugs to be inserted in the input and output terminals of this unit shall be pushed in firmly. If the grounding terminal is inadequately connected, noises including hum may be generated, resulting in an adverse S/N ratio.

## The sound is not generated shortly after the power supply is turned on.

This amplifier is equipped with a time muting circuit in order to separate the output circuit. Therefore, no sound is generated shortly after the power supply is turned on.

If the volume control is set to a high sound level before the time muting circuit is canceled, a large sound is suddenly generated. Please be advised that the volume control shall be set to a low level at first and adjusted after the sound comes out of the speakers.

# Features of This Unit

## **LECUA1000 — LUXMAN Electric Controlled Ultimate Attenuator 1000**

Application of the system to obtain attenuation by combining 2 fixed resistances connected in series has improved the efficiency of the LECUA1000 attenuator used in C-1000f.

The shortest signaling route has been achieved by the amplifier circuit thanks to the 3D structure of the mounting boards. Controlling LECUA1000 to the level equal to the volume position detected by a microprocessor has achieved the operation feeling similar to our conventional sliding-type volume controls.

## **ODNF - Only Distortion Negative Feedback -**

The amplification feedback circuit that has acquired the high-speed primary slew rate and ultra-wide bandwidth by feeding back only distortion components generated during amplification for the main amplifier to maintain the pure sound quality that is almost non-feedback.

With ODNF's latest version 4.0, in the amplification circuit, the first stage is 4-parallelized and the second stage is connected with Darlington. Due to these improvements, the low impedance and high S/N ratio of the transmission circuit have become possible.

In addition, the input stages of the error detection circuit are 3-parallelized to improve distortion and noise.

## **High-inertia power supply**

High-inertia power supply circuit that combines a large-capacity OI-core-type power transformer with customizable capacitor blocks.

## **Schottky barrier diode**

In the power supply rectifier circuit, schottky barrier diode manufactured by Nihon Inter Electronics Corporation that has less switching noises and higher conversion efficiency to the DC voltage is applied.

## **LUXMAN's original OFC wires**

Our original OFC wires are used in the internal wiring to achieve smooth signal transmission thanks to the spiral wrap shielding on each core and the non-plating processing on the core wire.

## **Loopless chassis**

The independent construction of a loopless chassis structure eliminates the rise of increased ground impedance caused by chassis current.

## **AC inlet**

This inlet enables the connection with an external power cable.

### **Zoom function**

When the ZOOM button on the remote control is pressed, the current volume level is enlarged on the display.

### **Dimmer function**

The brightness of the display window can be switched over in 4 steps.

### **Round pattern board**

In consideration of the delicate audio signal flow, circuit boards are round-patterned for the smooth current flow.

### **Input/output terminals**

Introduction of 18 mm pitch RCA input terminals and an XLR terminal manufactured by Neutrik allows even a high-performance line cable with large plug to be connected.

### **Remote control (RA-22)**

The remote control is encased in aluminum. Tactile switches will satisfy users with “clicking” key touch.

### **Cast-iron insulator**

The gradation cast-iron insulator that clears unnecessary external vibration and strongly supports the weight of this unit is equipped.

### **External pre-input terminal**

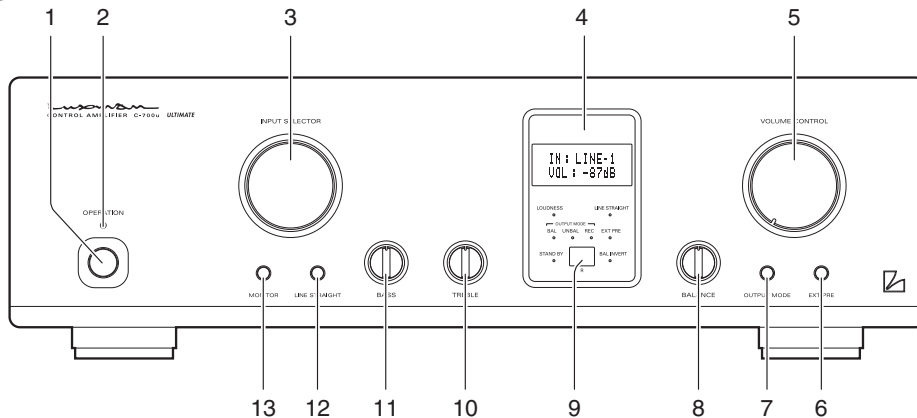
External pre-input terminal is equipped to select an input from external pre-amplifier or AV amplifier etc.

### **Selector relay**

Selector relay with high sound quality used in Luxman amplifiers enhances the separation and crosstalk performances.

# Names and Functions

## Front panel



### 1. Operation switch (OPERATION)

Turns this unit from the standby state to operation state. When the main power switch on the rear panel is turned on to set this unit to the standby state and this switch is turned on, this unit is set to the operation state. Pressing this switch again at the operating state turns the unit to the standby state.

### 2. Operation indicator (OPERATION)

Blinks during warm-up when the operation switch is turned on and lights up when the operation state is activated afterward.

### 3. Input selector (INPUT SELECTOR)

Selects the unbalanced input terminal or balanced input terminal, both of which are located on the rear panel.

- Input transition by rotating clockwise:  
LINE-1→LINE-2→LINE-3→LINE-4→LINE-5→BAL LINE-1→BAL LINE-2→LINE-1...
- Input transition by rotating counterclockwise:  
LINE-1→BAL LINE-2→BAL LINE-1→LINE-5→LINE-4→LINE-3→LINE-2→LINE-1 ...

Factory default: LINE-1

During input selecting operation, input/output muting circuit is in operation and the unit will be on mute.

### 4. Display window

Displays the operation status of this unit.

This display window is composed of 8 indicators, input display, and volume display.

### 5. Volume control (VOLUME CONTROL)

Adjusts the sound volume.

When this control is rotated counterclockwise to the end, the unit is on mute. The sound volume gradually becomes higher when the control is rotated clockwise as follows: mute→-87 dB→-86 dB→...→0 dB in steps of 1 dB.

## 6. External pre switch (EXT PRE)

Input selector switch to select the external pre-input terminal (EXT PRE) on the rear panel

**ON:** Outputs sound signals connected to EXT Pre terminal (pre-amplifier, AV amplifier etc.) directly.

**OFF:** Plays back a sound source selected by the input selector.

Holding down the switch for approx. 1 second toggles the external pre switch ON and OFF.

When the external pre switch is set to ON, the external pre indicator lights up.

When the main power switch is turned off or this unit is in the standby state, external pre-input signals are always provided from the unbalanced output terminal regardless of this switch setting. The input signals connected to the external pre-input terminal are not provided from the balanced output terminal.

When the external pre switch is set to ON, the volume control of this unit cannot adjust the sound volume.

Volume adjustment shall be performed at the input device side such as the pre-amplifier connected to the external pre-input terminal.

If a device that has no volume adjustment function such as a CD player is connected to the external pre-input terminal, the volume control of this unit cannot function, and therefore, sudden loud sound may be generated when the external pre-input is selected, which may cause hearing loss or damage to the speakers.

For such input devices, be sure to use a pre-amplifier or the like equipped with the sound volume adjustment function. After checking the sound through the speakers with volume lowered, adjust the volume to your favorite level.

When changing the connected devices, be sure to turn off the main power switch or set the unit to the standby state.

## 7. Output mode selection switch (OUTPUT MODE)

Selects an output mode from the following 3 kinds: unbalanced output, balanced output, and both (unbalanced + balanced) output.

By pressing this switch, the output changes as follows: UNBAL→BAL→BOTH→UNBAL ...

- Unbalanced output (UNBAL)  
Sound comes out from LINE-1 and LINE-2.
- Balanced output (BAL)  
Sound comes out from BAL LINE-1 and BAL LINE-2.
- Both output (BOTH)  
The unbalanced outputs, LINE-1 and LINE-2, and the balanced outputs, BAL LINE-1 and BAL LINE-2, provide audio output.

Factory default: Unbalanced output (UNBAL) mode

The input/output muting circuit is activated to mute sound during selecting an output mode.

Every output mode can store preset values, respectively.

Refer to the descriptions about presetting on pages 20 to 21 for presetting.

## 8. Balance control (BALANCE)

Adjusts the balance of sound volume between right and left channels.

Rotating this control counterclockwise makes the left sound volume enhanced, and rotating this control clockwise makes the right sound volume enhanced.

This control shall be set to the center position under normal conditions, and rotate to make adjustment if necessary.

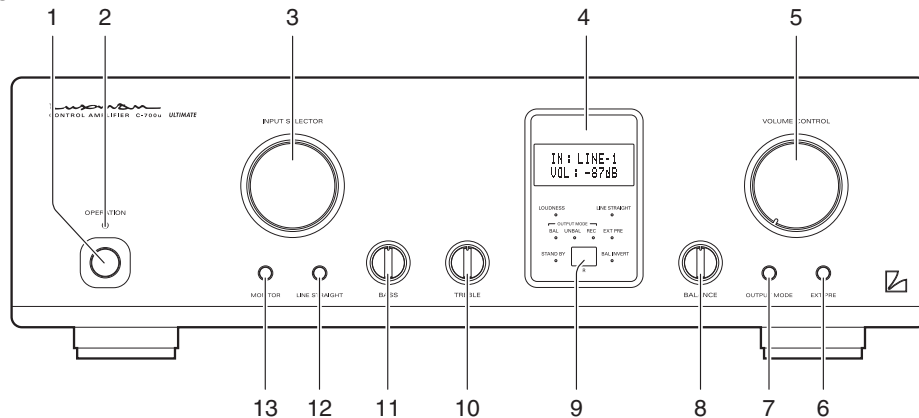
The adjustable value for right/left balance is up to -6 dB for right and left each.

## 9. Remote sensor (REMOTE)

Receives signals from the remote control.

# Names and Functions

## Front panel



### 10. Tone control for treble TONE CONTROL (TREBLE)

Controls the frequency characteristics in the high-frequency range.

When this control is set to the center position, flat frequency characteristic is obtained. Rotating this control clockwise makes the high-frequency range enhanced, and rotating this control counterclockwise makes the high-frequency range attenuated.

This control does not function when the line straight switch is set to ON.

### 11. Tone control for bass TONE CONTROL (BASS)

Controls the frequency characteristics in the low-frequency range.

When this control is set to the center position, flat frequency characteristic is obtained. Rotating this control clockwise makes the low-frequency range enhanced, and rotating this control counterclockwise makes the low-frequency range attenuated.

This control does not function when the line straight switch is set to ON.

### 12. Line straight switch (LINE STRAIGHT)

This switch is used to increase the purity of the sound quality by bypassing (skipping) the tone control circuit.

By pressing this switch, line straight setting toggles between ON and OFF repeatedly.

The line straight indicator lights up when the line straight switch is set to ON.

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**When the line straight switch is set to ON, the tone control and loudness do not function.**

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### 13. Monitor switch (MONITOR)

This switch is to activate the monitor input terminal.

ON: Plays back a source from the recorder.

OFF: Plays back a sound source selected by the input selector.

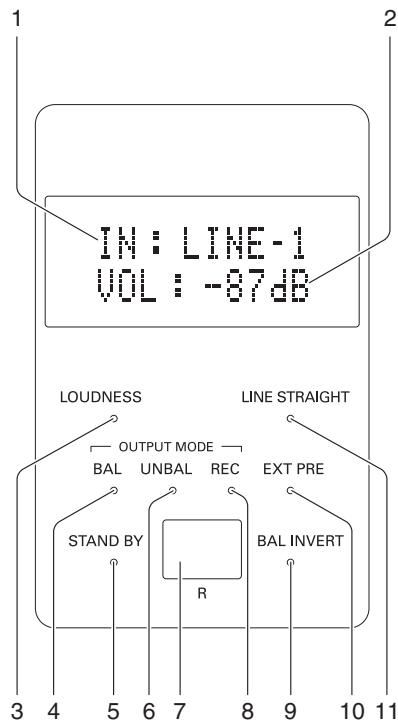
By pressing this switch, the monitor switches from on to off.





# Names and Functions

## Display window



### 1. Input indicator (IN:)

Displays the input terminal selected by the input selector or the remote control.

### 2. Volume indicator (VOL:)

Indicates the current volume level in steps of 1 dB.

- “-” shows the mute state. No sound is generated.
- The minimum volume level shown is “-87 dB”, and the maximum volume level shown is “0 dB”.

### 3. Loudness indicator (LOUDNESS)

Lights up when the loudness switch on the remote control is set to ON.

### 4. Balance indicator (BAL)

Lights up when the balanced output terminal is selected for the output mode.

### 5. Standby indicator (STAND BY)

Lights up when the main power switch on the rear panel is turned on and the operation switch is turned off.

When the operation switch is turned on or when the main power switch is turned off, this indicator turns off.

### 6. Unbalance indicator (UNBAL)

Lights up when the unbalanced output terminal is selected for the output mode.

### 7. Remote sensor (REMOTE)

Receives signals from the remote control.

### 8. Rec out indicator (REC)

Lights up when the rec out is activated by the preset function of the remote control.

### 9. Balanced phase inversion indicator (BAL INVERT)

Lights up when the phases of the balanced input and balanced output are inverse against the preset state of this unit.

### 10. External pre indicator (EXT PRE)

Lights up when the external pre switch is set to ON.

### 11. Line straight indicator (LINE STRAIGHT)

Lights up when the line straight switch is set to ON.

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When the line straight switch is set to ON, the loudness function cannot be operated from the accessory remote control. If the loudness switch is pressed, the line straight indicator blinks for 3 seconds to show that this operation cannot be performed.

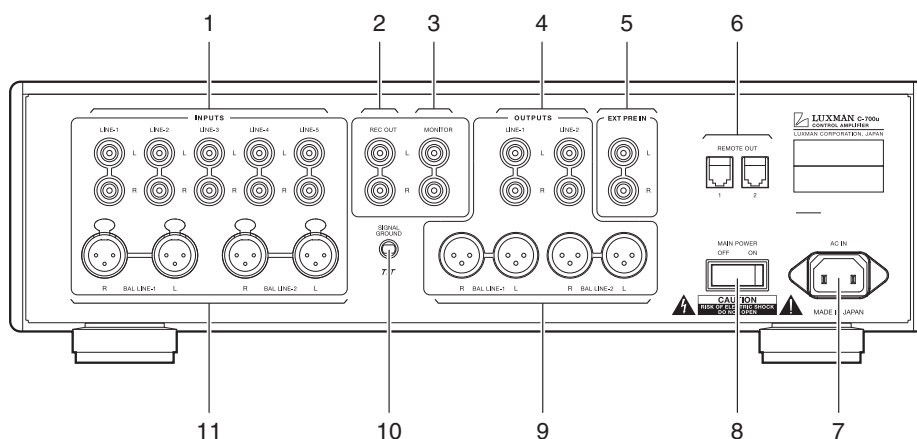
Perform the loudness function after setting the line straight switch to OFF.

The loudness function can be toggled ON and OFF only with the accessory remote control (RA-22).

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# Names and Functions

## Rear panel



### 1. Unbalanced input terminals/INPUTS (LINE-1, LINE-2, LINE-3, LINE-4, LINE-5)

RCA terminals to input unbalanced audio signals of a line level

Connect these terminals to an unbalanced output of an input device such as a CD player with a pin-plug cable.

Audio signal inputs are selected by the input selector and delivered.

LINE-1, LINE-2, LINE-3, LINE-4 and LINE-5 are equivalent in quality.

### 2. Record output terminal (REC OUT)

RCA terminal to output audio signals of an input device selected by the input selection switch.

Connect this terminal to a line input of a recorder with a pin-plug cable.

Output audio signals are not affected by the tone control function, volume control function, or LR balance function.

This output terminal can be toggled on and off with use of the preset function of the remote control.

Factory default: Rec out on

### 3. Monitor input terminal (MONITOR)

RCA terminal to input audio signals of a recorder.

Connect this terminal to a line output of a recorder with a pin-plug cable.

Audio signal input is selected by the monitor switch and delivered.

Factory default: Monitor off

### 4. Unbalanced output terminals/OUTPUTS (LINE-1, LINE-2)

RCA terminals to output unbalanced audio signals of this unit.

Connect these terminals to an unbalanced input of an output device such as a power amplifier with a pin-plug cable.

Audio output signals are selected by the output mode selection switch.

LINE-1 and LINE-2 are equivalent in quality.

Factory default output mode: Unbalanced (UNBAL)

## 5. External pre-input terminal (EXT PRE IN)

RCA terminal to input output signals from an external pre-amplifier or an AV amplifier

This terminal is connected to unbalanced output terminal directly and outputs the signal connected to ext pre in.

External pre-input signals are not affected by the volume control of this unit.

## 6. Remote output terminals (REMOTE OUT)

If a power amplifier (e.g. M-700u) equipped with a dedicated remote input terminal is connected to this remote output terminal with a dedicated remote cable, the power of the power amplifier provided the signal can be turned on and off by the operation switch of this unit.

ON signals from the remote output terminals are transmitted in a certain period of time after pressing the operation switch of this unit. Therefore, the power amplifier provided the signal is activated after the time elapsed that consists of the muting time of the power amplifier and this transmission delay time.

The remote output terminals 1 and 2 can turn on and off 2 units of power amplifiers at the same time.

Refer to the owner's manual of a signal-receiving power amplifier for available operation settings of the signal-receiving power amplifier.

## 7. AC inlet (AC IN)

Connects the accessory power cable.

The power shall be supplied from a household wall socket.

## 8. Main power switch (MAIN POWER)

Turns this unit to the standby state.

When this switch is set to ON, the standby indicator on the front panel lights up and shows that this unit turns to the standby state.

When this switch is set to OFF, the standby indicator on the front panel turns off to show that the main power is turned off.

## 9. Balanced output terminals/OUTPUTS (BAL LINE-1, BAL LINE-2)

XLR connector terminal to output balanced audio signals from this unit

Connect these terminals to a balanced input of an output device such as a power amplifier with a balanced cable.

Audio output signals are selected with the output mode selection switch.

BAL LINE-1 and BAL LINE-2 are equivalent in quality.

Factory default output mode: Unbalanced (UNBAL)

## 10. Signal ground (ground terminal) (SIGNAL GROUND)

Ground terminal for devices to be connected to this unit.

This terminal is used not for safety but for noise reduction when other devices are connected.

## 11. Balanced input terminals/INPUTS (BAL LINE-1, BAL LINE-2)

XLR connector input terminal to receive balanced audio signals of a line level.

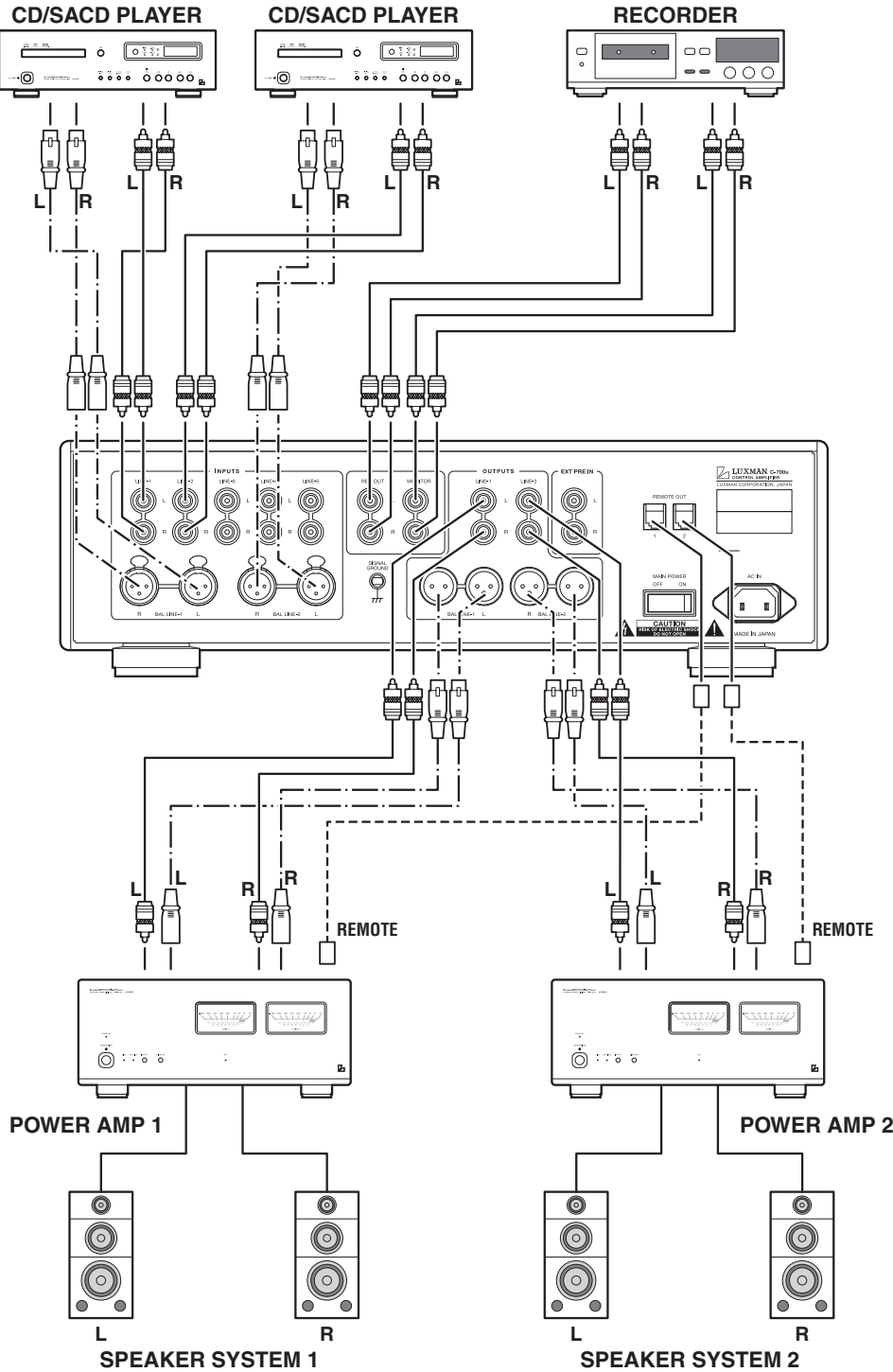
Connect these terminals to a balanced output of an input device such as a CD player with a balanced cable.

Incoming audio signals are selected with the input selector and delivered.

BAL LINE-1 and BAL LINE-2 are equivalent in quality.

# Connections

## Normal stereo playback



## Before Connecting

Before connecting other devices, connect the jack side of the accessory power cable to the AC inlet of this unit.

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**Before connection, turn off the main power switch of this unit and the power of all other connected devices to prevent unexpected accidents that may be caused by noise.**

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## How to connect power supply

Use the accessory power cable and insert the AC plug in an outlet on the wall in the room where the unit will be installed.

## How to connect the input terminals to input devices such as a CD player

Connect the output terminals of an input device such as a CD player to the input terminals of this unit with pin-plug cables or balanced cables.

In connecting, take great care not to connect the right and left channels reversely. If these are connected reversely the localization of sound images is deteriorated and proper playback is not acquired.

In case of using pin-plug cables, If the ground side of pin-plug cable is floating, it may cause generation of noises like hum, deterioration of S/N ratio. Be sure to insert the plug securely.

## How to connect the output terminals to output devices such as a power amplifier

Connect between the input terminals of an output device such as a power amplifier and the output terminals of this unit with pin-plug cables or balanced cables.

In connecting, take great care not to connect the right and left channels reversely. If these are connected reversely the localization of sound images is deteriorated and proper playback is not acquired.

In case of using pin-plug cables, If the ground side of pin-plug cable is floating, it may cause generation of noises like hum, deterioration of S/N ratio. Be sure to insert the plug securely.

## How to connect the remote output terminal to a power amplifier

Connect the remote input terminal of a power amplifier such as Luxman M-700u to the remote output terminal of this unit with the dedicated remote cable (no polarity) attached to the power amplifier.

Through the connection, the power of the power amplifier can be turned on and off by the operation switch of this unit.

Two (2) remote output terminals are available, and both terminals provide the same signals. Use them according to your taste.

Use the dedicated remote cable only for the connection between Luxman control amplifiers and Luxman power amplifiers. Connection to such a terminal that the remote output of this unit is short-circuited may cause a malfunction.

When this unit is connected to an output device, turn off the main power switch of this unit or turn this unit to the standby state to protect the amplifier and speakers from excessive input, and turn off the power of the input/output devices connected to this unit. After connection, confirm that connections are appropriately done and turn this unit and the input/output devices to the operating state.

## How to connect a recorder

Connect the input terminals of a recorder to the record output terminals of this unit with pin-plug cables.

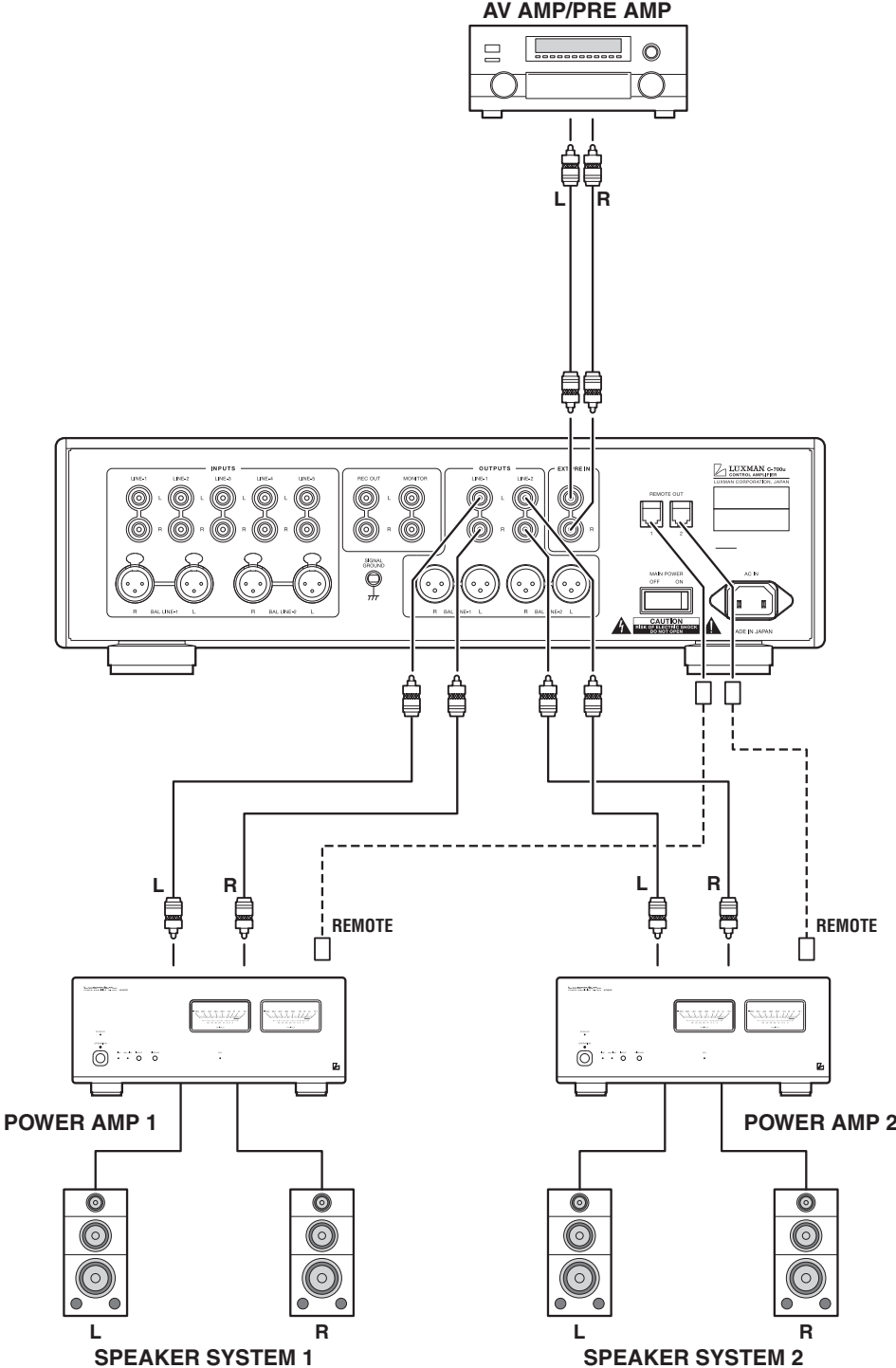
Through the connection, while listening to a sound source selected by the input selector, it is possible to record the listening source at the same time. Next, connect the output terminals of the recorder to the monitor input terminals of this unit with pin-plug cables. Then, press the monitor switch of this unit, it is possible to listen the recorded source and check the recording condition at the same time.

In connecting, take great care not to connect the right and left channels reversely. If these are connected reversely the localization of sound images is deteriorated and proper playback is not acquired.

If the ground side of pin-plug cable is floating, it may cause generation of noises like hum, deterioration of S/N ratio. Be sure to insert the plug securely.

# Connections

## External pre playback





## External pre playback

### Connection of external pre-input terminal to input devices such as an AV amplifier

When this unit is used through the external pre-input, only the unbalanced output terminal is valid as an output terminal of this unit. There is no output at the balance output terminal.

When the main power switch is turned off or this unit is in the standby state, external pre -input signals are always provided from the unbalanced output terminal regardless of the external pre switch setting.

Connect the pre-out terminal of an input device such as an AV amplifier and a pre-amplifier to the external pre-input terminal of this unit with a pin-plug cable.

In connecting, take great care not to connect the right and left channels reversely. If these are connected reversely the localization of sound images is deteriorated and proper playback is not acquired.

If the ground side of pin-plug cable is floating, it may cause generation of noises like hum, deterioration of S/N ratio. Be sure to insert the plug securely.

When the external pre switch is set to ON, the volume control of this unit cannot adjust the sound volume.

It is necessary to adjust the volume at the input device's side (AV amplifier, pre-amplifier etc.) connected to the ext pre-input terminal.

If a device that has no volume adjustment function such as a CD player is connected to the external pre-input terminal, the volume control of this unit cannot function, and therefore, sudden loud sound may be generated when the external pre-input is selected, which may cause hearing loss or damage to the speakers.

For such input devices, be sure to use a pre-amplifier or the like equipped with the sound volume adjustment function. After checking the sound through the speakers with volume lowered, adjust the volume to your favorite level.

# Operations

## Before operation

1. Be sure that the connections are correctly performed.  
(Normal playback cannot be achieved with wrong connections of R and L.)
2. When the power is turned on or off or the input selector is changed over, set the volume control to the minimum position in advance.

## Playback procedure

1. Press the operation switch to turn on the switch after ensuring that the volume control is set to the minimum position.
2. Select a playback source by the input selector.
3. Adjust the sound level by the volume control.
4. Operate the line straight switch, balance control, tone control, and the like according to the playback source.

## How to operate line straight switch

The line straight switch is used to play back with the shortest signaling route for enhancing the purity of the source selected with the input selector. When this switch is set to ON, the tone control and loudness are bypassed.

## How to operate balance control

The balance control is used to adjust the balance of sound volume between right and left channels.

When the balance adjustment is not required, the balance control is set to the center position.

## How to operate the tone control

This unit has the tone control function for the low-frequency and high-frequency ranges.

The low-frequency range type works in the 300 Hz or lower. The tone control is set to flat frequency characteristic at the center position. Rotating the control clockwise makes the low-frequency range enhanced, and rotating the control counterclockwise makes the low-frequency range attenuated.

The high-frequency range type works in the 3 kHz or higher. The tone control is set to flat frequency characteristic at the center position. Rotating the control clockwise makes the high-frequency range enhanced, and rotating the control counterclockwise makes the high-frequency range attenuated.

For both the low-frequency and high-frequency ranges, the right and left channels interlockingly function.

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**When the line straight switch is set to ON, the tone control does not function.**

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## How to record a source

1. Select a source to be recorded with the input selector.
  2. Activate the rec out by the preset function of the remote control.
  3. Play the source to be recorded and set the recorder to the recording state.
- \* Operation of the tone control or balance control does not affect the recording signals.
  - \* Rec out functions when the power is turned on.

## Memory

This unit memorizes the following items when the operation switch is set to OFF or the main power switch is set to OFF:

Item	Default
INPUT	Selected source
OUTPUT MODE	Selected mode
BAL PHASE	INPUT-1, 2 : 3±, 2± OUTPUT : 3±, 2±
BAL INVERT	NORMAL / INVERT
DIMMER	Normal light/dim/very dim/ light off
ZOOM	ON / OFF
LOUDNESS	ON / OFF
LINE-STRAIGHT	ON / OFF
EXT PRE	ON / OFF
MONITOR	ON / OFF
REC OUT	ON / OFF

## Inhibition and caution

When a setting cannot be changed, an error message as follows is displayed:

Display	Caution
UNBALANCE MODE!!	When the input and output are both unbalance, the balanced phase cannot be inverted.
STRAIGHT ON!!	When the line straight is set to ON, loudness cannot be selected.
EXT PRE MODE!!	When the external pre is set to ON, mute cannot be selected.
EXT PRE MODE!!	When the external pre is set to ON, the output mode cannot be changed.

## Memory reset

The following operations restore all the settings to the factory defaults.

- (1) Turn this unit to the standby state.
- (2) Hold down the operation switch on the main unit for 5 seconds or more and press the dimmer switch once while holding down the operation switch.

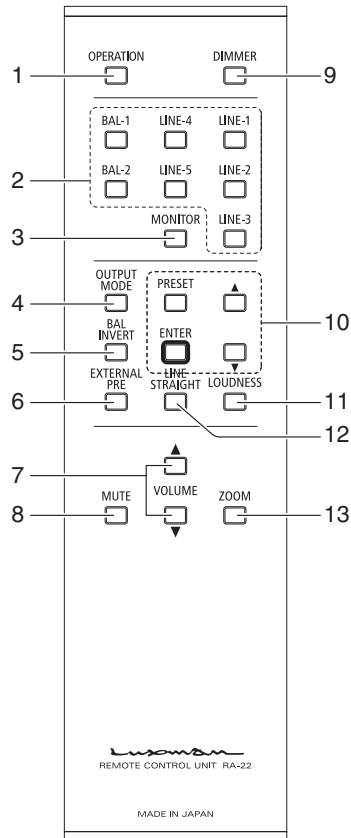
That's all for memory reset.

### Factory default

Item	Default
INPUT	LINE-1
OUTPUT MODE	UNBALANCE
BAL PHASE	INPUT-1, 2 : 3+, 2- OUTPUT : 3+, 2-
BAL INVERT	NORMAL
DIMMER	MAX (under normal conditions)
ZOOM	OFF
LOUDNESS	OFF
LINE-STRAIGHT	OFF
EXT PRE	OFF
MONITOR	OFF
REC OUT	ON

# How to use Remote Control

## Remote controller (RA-22)



### 1. Operation switch (OPERATION)

Turns this unit from the standby state to operation state.  
When the main power switch on the rear panel is turned on to set this unit to the standby state and this switch is turned on, this unit is set to the operation state.  
Pressing this switch again at the operating state turns the unit to the standby state.

### 2. Input selector (LINE-1, LINE-2, LINE-3, LINE-4, LINE-5, BAL-1, BAL-2)

Selects the unbalanced input terminal or balanced input terminal, both of which are located on the rear panel.  
During input selecting operation, input/output muting circuit is in operation and the unit will be on mute.

### 3. Monitor switch (MONITOR)

This switch is to activate the monitor input terminal.  
ON: Plays back a source from the recorder.  
OFF: Plays back a sound source selected by the input selector.  
By pressing this switch, the monitor switches from on to off.

#### 4. Output mode selection switch (OUTPUT MODE)

Selects an output mode from the following 3 kinds: unbalanced output, balanced output, and both (unbalanced + balanced) output.

By pressing this switch, the output changes as follow: UNBAL→BAL→BOTH→UNBAL ...

- Unbalanced output (UNBAL)  
Sound comes out from LINE-1 and LINE-2.
- Balanced output (BAL)  
Sound comes out from BAL LINE-1 and BAL LINE-2.
- Both output (BOTH)  
The unbalanced outputs, LINE-1 and LINE-2, and the balanced outputs, BAL LINE-1 and BAL LINE-2, provide audio output.

Factory default: Unbalanced output (UNBAL) mode

The input/output muting circuit is activated to mute sound during selecting an output mode.

Every output mode can store preset values, respectively.

#### 5. Balanced phase inversion switch (BAL INVERT)

Inverts the balanced phase specified with the preset function of this unit. When the phases of a balanced input and a balanced output must be inverted against the preset state, press this switch to invert the balanced phases.

By pressing this switch, the balanced phase changes as follows: NORMAL→INVERT→NORMAL→INVERT ...

During toggling the balanced phase between NORMAL and INVERT, input/output muting circuit is in operation and the unit will be on mute.

#### 6. External pre switch (EXTERNAL PRE)

Input selector switch to select the external pre-input terminal (EXT PRE) on the rear panel

ON: Outputs sound signals connected to EXT Pre terminal (pre-amplifier, AV amplifier etc.) directly.

OFF: Plays back a sound source selected by the input selector.

Holding down the switch for approx. 1 second toggles the external pre switch ON and OFF.

When the external pre switch is set to ON, the external pre indicator lights up.

#### 7. Volume control switch (VOLUME)

Adjust the output level of this unit.

Pressing these switches change the output level.

- Pressing ▲ increase the sound volume.
- Pressing ▼ decrease the sound volume.

#### 8. Mute switch (MUTE)

Deadens the sound temporarily.

To cancel mute, press the mute switch again.

Volume level change adjusts the volume level while the sound is muted but does not cancel the mute function.

#### 9. Dimmer switch (DIMMER)

Adjusts the brightness of the input display and volume display on the display window.

The brightness can be adjusted in 4 stages from no light to normal lighting on.

By pressing this switch, the brightness changes as follows:

Normal light→dim→very dim→light off→Normal light ...

Selection of no light displays "DISPLAY OFF" for 1 second and the sign turns off.

Factory default: Normal light

#### 10. Preset switch (PRESET) Enter switch (ENTER)

Determines adjustments or setting values.

▲ switch (UP)

▼ switch (DOWN)

Changes levels or settings.

# How to use Remote Control

## Balanced phase setting/BAL PHASE presetting

The balanced phase can be set for input and output, respectively.

- (1) Press the PRESET switch to turn this unit to the preset mode, and BAL PHASE blinks. (1st line of  $\text{\textcircled{A}}$ ) If the balanced phase is not adjusted, press the PRESET switch to go to the next REC OUT setting.
- (2) Press the ENTER switch, 3+ and 2- of BAL-1 blink to show that the BAL LINE-1 phase inversion setting of the balanced input can be performed. (2nd line of  $\text{\textcircled{A}}$ ) If the ENTER switch is pressed one more time, the step goes to the BAL LINE-2 phase inversion setting of the balanced input.
- (3) Press  $\blacktriangle$  or  $\blacktriangledown$  to invert the BAL LINE-1 phase of the balanced input and the display turns to 3- and 2+. (3rd line of  $\text{\textcircled{A}}$ ) Press  $\blacktriangle$  or  $\blacktriangledown$  again to turn the phase setting back to 3+ and 2-.
- (4) Press the ENTER switch to determine the changed setting of BAL LINE-1, 3+ and 2- of BAL-2 blink to show that the BAL LINE-2 phase inversion setting of the balanced input can be performed. (4th line of  $\text{\textcircled{A}}$ ) If the ENTER switch is pressed one more time, the step goes to the BAL OUT phase inversion setting.
- (5) Press  $\blacktriangle$  or  $\blacktriangledown$  invert the BAL LINE-2 phase of the balanced input, and the display turns to 3- and 2+. (5th line of  $\text{\textcircled{A}}$ ) Press  $\blacktriangle$  or  $\blacktriangledown$  again to turn the phase setting back to 3+ and 2-.
- (6) Press the ENTER switch to determine the changed setting, 3+ and 2- of BAL OUT blink to show that the BAL LINE-1 and BAL LINE-2 phase inversion settings of the balanced output can be performed. (6th line of  $\text{\textcircled{A}}$ ) Press the ENTER switch to set the step back to the step (2) to enable the BAL LINE-1 phase inversion setting of the balanced input again.
- (7) Press  $\blacktriangle$  or  $\blacktriangledown$  to invert the BAL LINE-1 and BAL LINE-2 phases of the balanced output and the display turns to 3- and 2+. (7th line of  $\text{\textcircled{A}}$ ) Press  $\blacktriangle$  or  $\blacktriangledown$  again to turn the phase setting back to 3+ and 2-.

- (8) Press the ENTER switch to set the step back to the step (2) to enable the BAL LINE-1 phase inversion setting of the balanced input again.

If the PRESET switch is pressed, the step goes to the next REC OUT setting.

If the PRESET switch is pressed in any state of the steps from (1) through (8), the setting is memorized, BAL PHASE ends, and the step goes to the next REC OUT setting.

If no entry is performed for 1 minute in the preset mode, the current mode ends with the immediately preceding setting stored, and the regular display resumes.

## Record output terminal on and off setting/REC OUT presetting

Providing the record output terminals with audio signals can be toggled on and off.

To record sound using a recorder, set this setting to ON.

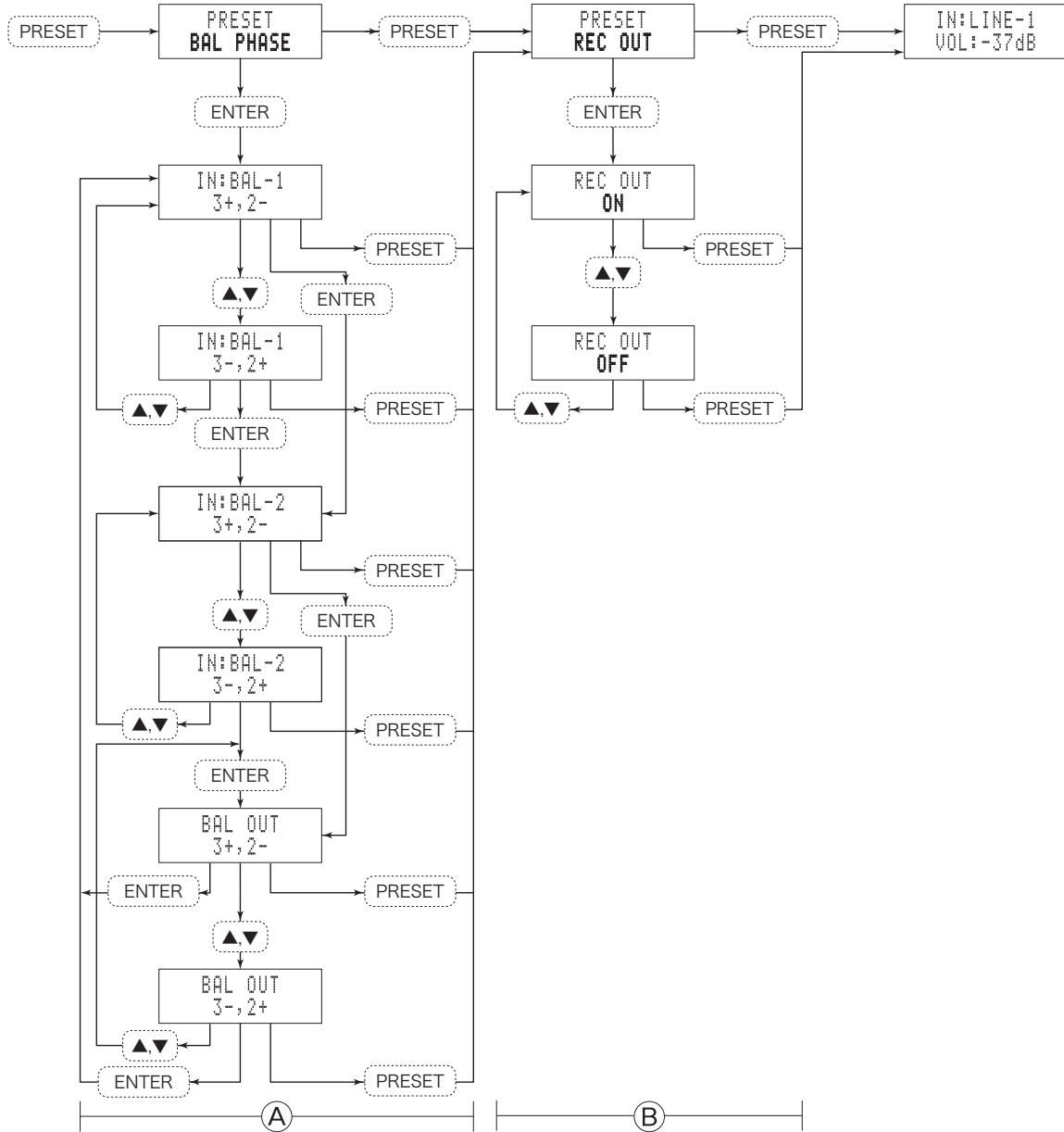
To enjoy playing back the music high in purity, set this setting to OFF.

- (1) Press the PRESET switch twice. The 1st line of  $\text{\textcircled{B}}$  appears and the preset mode is activated. "REC OUT" blinks. If the on-off setting is performed, press the ENTER switch. If the on-off setting is not performed, press the PRESET switch to exit from the preset mode.
- (2) When the ENTER switch is pressed, the currently selected ON (or OFF) blinks to show that REC OUT ON or OFF can be selected. (2nd line of  $\text{\textcircled{B}}$ )
- (3) Press  $\blacktriangle$  or  $\blacktriangledown$  changes the setting to OFF (or ON). (3rd line of  $\text{\textcircled{B}}$ ) Pressing  $\blacktriangle$  or  $\blacktriangledown$  again turns the setting back to ON (or OFF).

Press the PRESET switch to exit from the preset mode. Even if the ENTER switch is pressed in this state, the ENTER switch does not function.

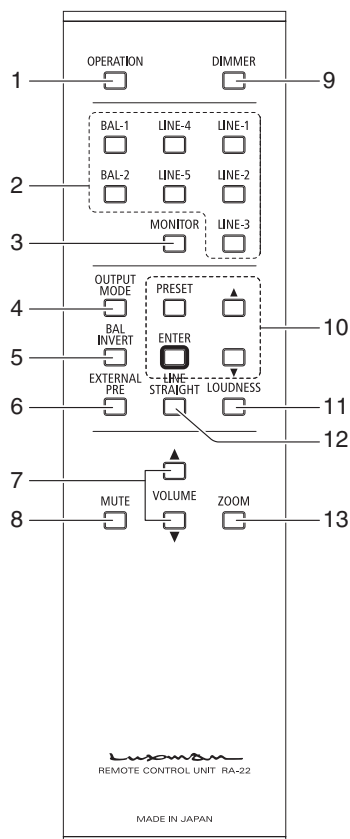
Pressing the PRESET switch allows the setting to be memorized in any state of the steps from (1) through (3) and the preset mode to end.

If no entry is performed for 1 minute in the preset mode, the current mode ends with the immediately preceding setting stored, and the regular display resumes.



# How to use Remote Control

## Remote controller (RA-22)



### 11. Loudness switch (LOUDNESS)

Psychoacoustically compensates the frequency characteristics when the volume control is set to -16 dB or less.

This compensation allows listeners to complement human listening characteristics when the sound volume is in the low level.

By pressing this switch, the loudness setting toggles between ON and OFF repeatedly.

The loudness indicator lights up when the loudness switch is on.

When the line straight switch is set to ON, this switch does not function.

### 12. Line straight switch (LINE STRAIGHT)

This switch is used to increase the purity of the sound quality by bypassing (skipping) the tone control circuit.

By pressing this switch, the line straight setting toggles between ON and OFF repeatedly.

The line straight indicator lights up when the line straight switch is set to ON.

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**When the line straight switch is set to ON, the tone control and loudness do not function.**

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### 13. Zoom switch (ZOOM)

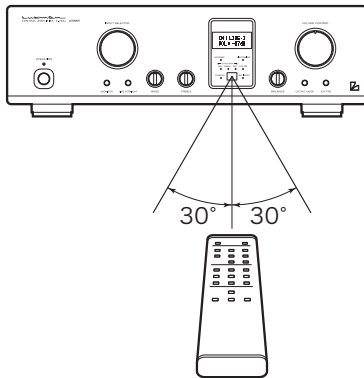
Enlarges the current volume level and displays it.

When this switch is pressed again, the regular display resumes.



## Remote control

The remote control shall be aimed at the remote sensor of this unit within the specified angle range shown in the illustration when used.

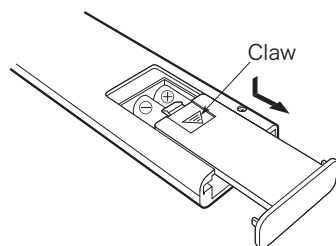


Effective distance: approx. 5 m

## Dry cell

### [How to load dry cells]

1. Remove the battery cover on the rear of the remote control.  
Put your finger on the battery cover claw and slide the cover downward to remove the cover.
2. Put 2 AAA batteries in the battery case as shown in the illustration on the battery case in consideration of the polarity ( $\oplus$  and  $\ominus$ ).
3. In the reverse order of battery cover removal, put the battery cover back to the opening of the remote control and slide the cover upward until it clicks.

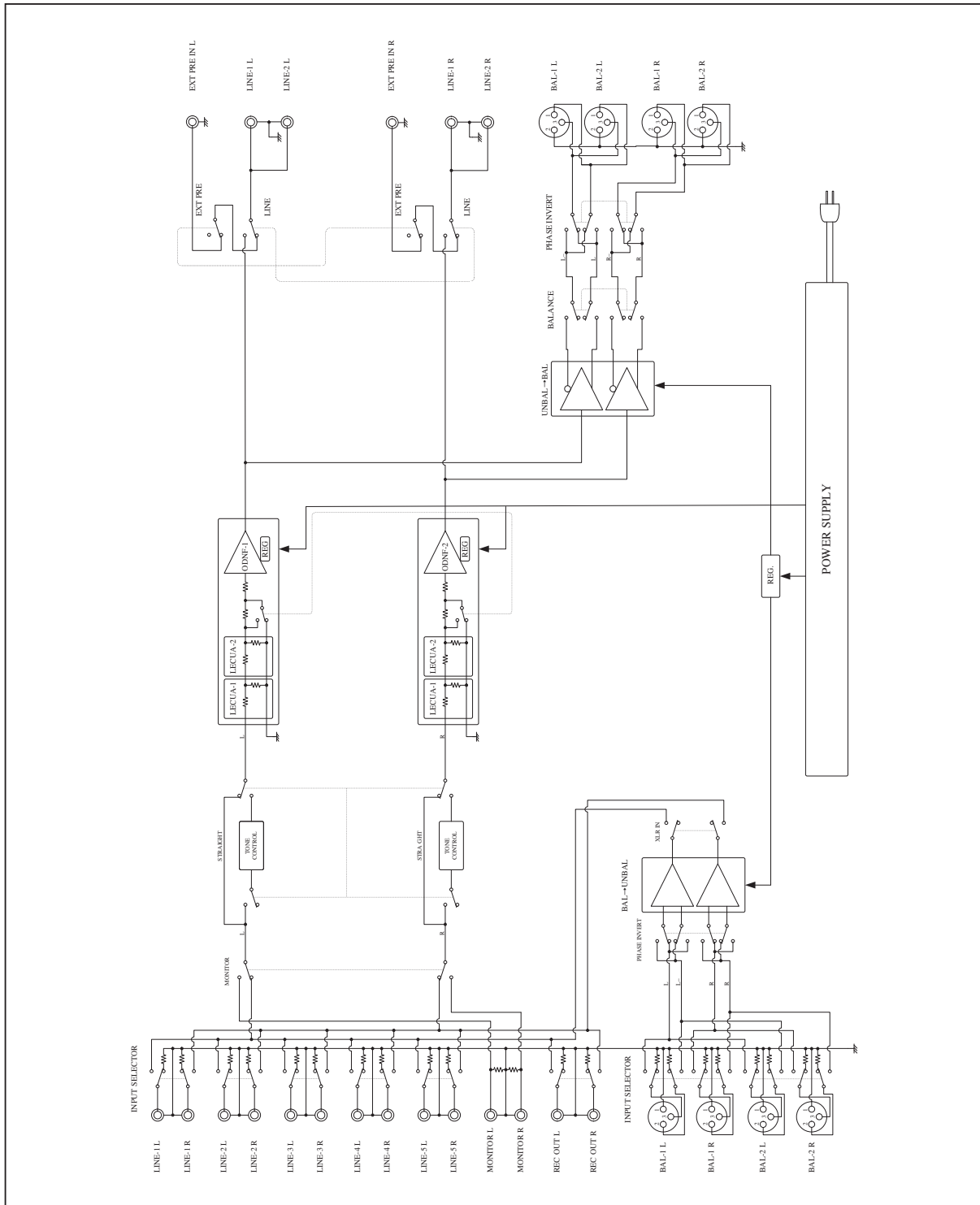


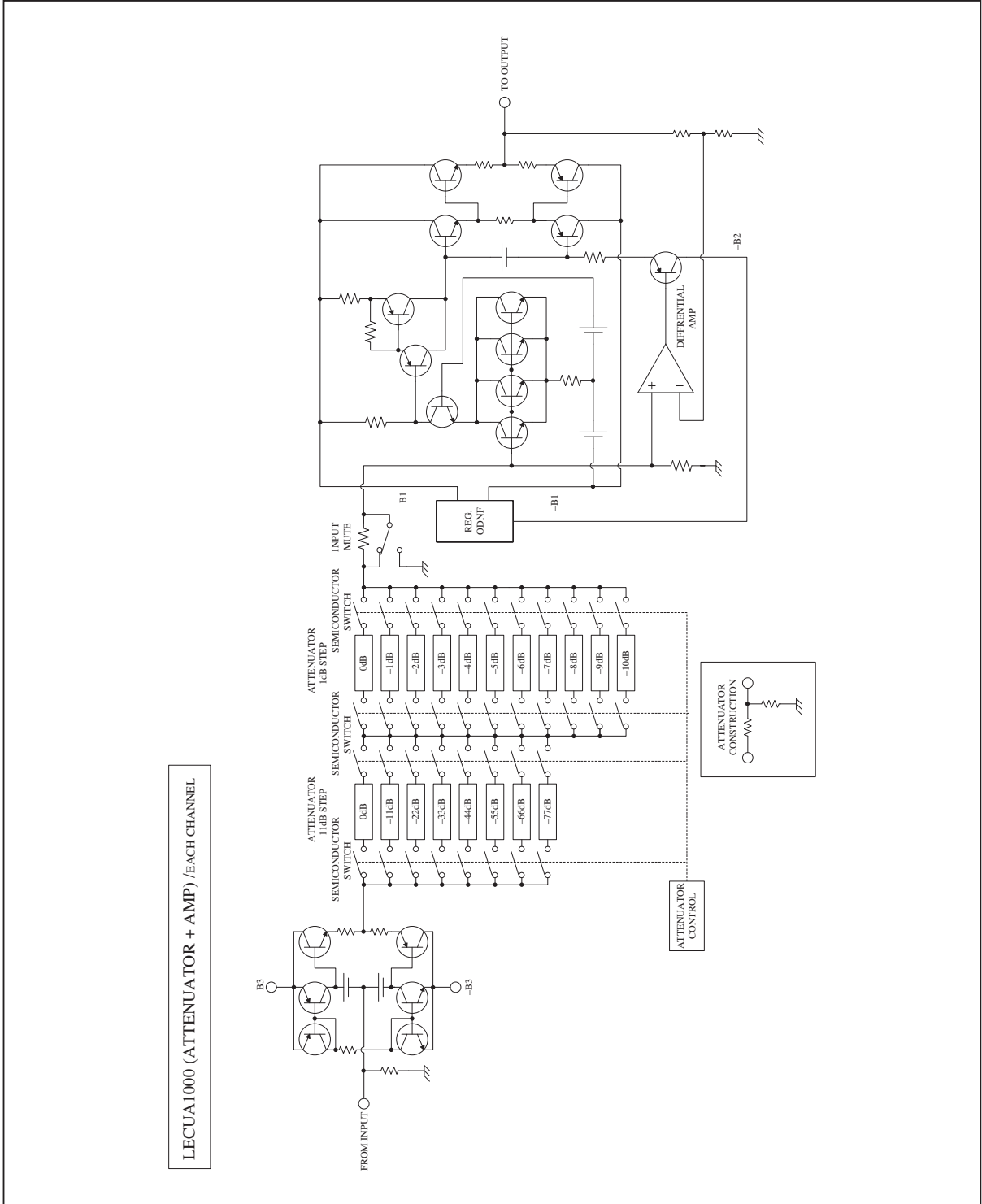
\* When the batteries start to lose power, the effective distance becomes shorter or the unit does not function even though the switch is pressed.

In such a case, both of the batteries shall be replaced with new ones at the same time.

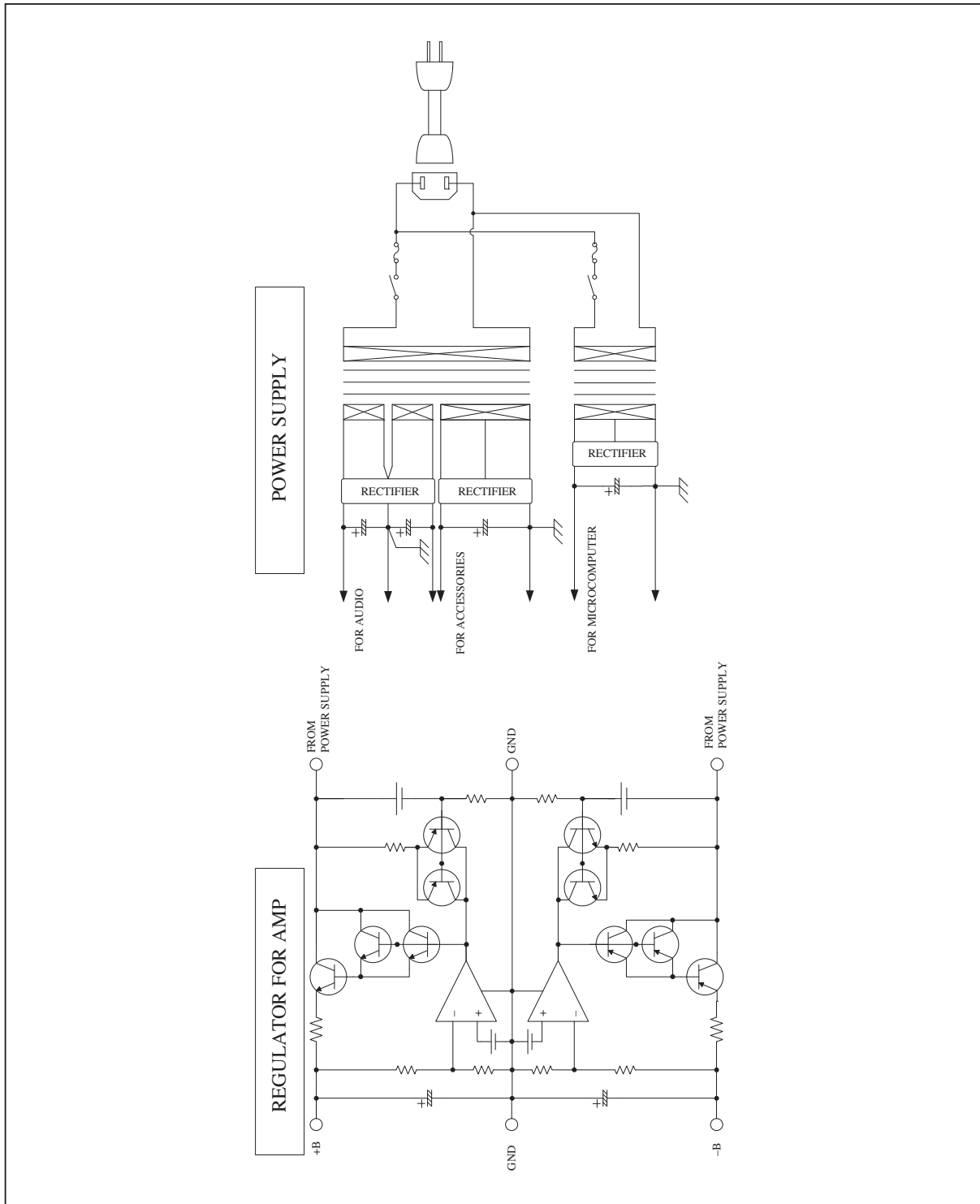
\* If the remote control is not used for a long time, the batteries shall be removed from the case.

# Block Diagram





# Block Diagram



# Specifications



<b>Input sensitivity</b>	LINE	: 250 mV / 1 V output, 1 kHz, load 50 k $\Omega$
	BAL LINE	: 250 mV / 1 V output, 1 kHz, load 100 k $\Omega$
	LINE $\rightarrow$ BAL LINE	: 250 mV / 1 V output, 1 kHz, load 100 k $\Omega$
	BAL LINE $\rightarrow$ LINE	: 250 mV / 1 V output, 1 kHz, load 50 k $\Omega$
<b>Maximum output</b>	LINE	: 11 V / distortion 0.1 %, 1 kHz, load 50 k $\Omega$
	BAL LINE	: 11.5 V / distortion 0.1 %, 1 kHz, load 100 k $\Omega$
	LINE $\rightarrow$ BAL LINE	: 11.5 V / distortion 0.1 %, 1 kHz, load 100 k $\Omega$
	BAL LINE $\rightarrow$ LINE	: 11 V / distortion 0.1 %, 1 kHz, load 50 k $\Omega$
<b>Input impedance</b>	LINE	: 46 k $\Omega$ / 1 kHz
	BAL LINE	: 67 k $\Omega$ / 1 kHz
	Unselected LINE	: 33 k $\Omega$ / 1 kHz
	Unselected BAL LINE	: 67 k $\Omega$ / 1 kHz
<b>Output impedance</b>	LINE	: 90 $\Omega$ / 1 kHz
	BAL LINE	: 600 $\Omega$ / 1 kHz
<b>Total harmonic distortion</b>	LINE	: 0.007 % / 1 V output, 20 Hz - 20 kHz, load 50 k $\Omega$
	BAL LINE	: 0.010 % / 1 V output, 20 Hz - 20 kHz, load 100 k $\Omega$
	LINE $\rightarrow$ BAL LINE	: 0.007 % / 1 V output, 20 Hz - 20 kHz, load 100 k $\Omega$
	BAL LINE $\rightarrow$ LINE	: 0.009 % / 1 V output, 20 Hz - 20 kHz, load 50 k $\Omega$
<b>Frequency response</b>	LINE	: +0, -0.1 dB / 1 V output, 20 Hz - 20 kHz, load 50 k $\Omega$
		: +0, -3.0 dB / 1 V output, 5 Hz - 120 kHz, load 50 k $\Omega$
	BAL LINE	: +0, -0.2 dB / 1 V output, 20 Hz - 20 kHz, load 100 k $\Omega$
		: +0, -3.0 dB / 1 V output, 5 Hz - 80 kHz, load 100 k $\Omega$
	LINE $\rightarrow$ BAL LINE	: +0, -0.2 dB / 1 V output, 20 Hz - 20 kHz, load 100 k $\Omega$
		: +0, -3.0 dB / 1 V output, 5 Hz - 110 kHz, load 100 k $\Omega$
	BAL LINE $\rightarrow$ LINE	: +0, -0.2 dB / 1 V output, 20 Hz - 20 kHz, load 50 k $\Omega$
		: +0, -3.0 dB / 1 V output, 5 Hz - 85 kHz, load 50 k $\Omega$
<b>S/N ratio</b>	LINE	: 125 dB (IHF-A) / distortion 0.1 %, 1kHz, load 50 k $\Omega$
	BAL LINE	: 122 dB (IHF-A) / distortion 0.1 %, 1kHz, load 100 k $\Omega$ (ATT. -87dB)
	LINE $\rightarrow$ BAL LINE	: 122 dB (IHF-A) / distortion 0.1 %, 1kHz, load 100 k $\Omega$
	BAL LINE $\rightarrow$ LINE	: 125 dB (IHF-A) / distortion 0.1 %, 1kHz, load 50 k $\Omega$ (ATT. -87dB)
<b>Tone control</b>	Max. amount of change	BASS : $\pm$ 8 dB at 100 Hz TREBLE : $\pm$ 8 dB at 10 kHz
<b>Loudness control</b>	100 Hz	: +7 dB
	10 kHz	: +5 dB
<b>Accessories</b>	<ul style="list-style-type: none"> <li>• Power cable</li> <li>• 2 pieces of "AAA" batteries</li> <li>• Safety cautions</li> </ul>	<ul style="list-style-type: none"> <li>• Remote control, RA-22</li> <li>• Owner's manual</li> </ul>
<b>Power consumption</b>	28 W 2 W (at standby)	
<b>Power supply</b>	230 V ~ (50 Hz)	
<b>Max. external dimensions</b>	440 (W) $\times$ 130 (H) $\times$ 430 (D) mm	
<b>Weight</b>	14.6 kg (main unit only)	

\* Specifications and appearance are subject to change without notice.

## Before Asking for Repair Services

While the unit is used, an unusual phenomenon may be confused as a malfunction for a certain reason. Prior to asking us for repair services, please check the table below and read the instruction manual for the subsidiary devices. If the cause of the malfunction cannot be identified, please contact your dealer. When we have once accepted your request for repair services, inspection fees and traveling expenses may be claimed even though the unit is found to be normal.

Problem	Cause	Solution
No power is supplied even though the main power switch is pressed. The standby indicator does not light.	· The power plug is disconnected from the wall outlet, or it is not completely inserted.	· Insert the power plug in the wall outlet completely.
	· The power plug is disconnected from the AC inlet, or it is not inserted completely.	· Securely insert the power plug in the AC inlet.
The operation indicator does not light even though the operation switch is pressed.	· The main power switch is turned off.	· Turn on the main power switch to light the standby indicator.
No sound is generated.	· The volume control or attenuator of the power amplifier is set to the minimum level.	· Rotate the volume control or attenuator of the power amplifier to adjust the sound volume.
	· The input selector is not set to the source to played back.	· Set the input selector to the source to played back.
	· The connected output terminal does not match the selected output mode setting.	· Adjust the output mode of the connected output terminal according to the selected output mode.
	· Cable connections are incomplete.	· Make cable connections securely.
	· The mute switch of the remote control is set to ON.	· Set the mute switch to OFF.
Sound is generated but the sound volume is low. The sound volume is low only at one side channel.	· The balance control is rotated in a one-sided manner.	· The balance control shall be set to the center position under normal conditions.
	· The attenuator of the power amplifier is set to ON.	· Set the attenuator to OFF.
	· The external pre switch is set to ON.	· Set the external pre switch to OFF.
Humming sound (boon or zzz noise) is generated.	· The grounding side of the connection cable has no contact with the terminal.	· Make cable connections securely.
	· Induction noise is picked up from the power transformer of another device.	· Install it distant from other devices. Use a wall socket of a different line.
	· The input/output cables and speaker cables are too close to the power cable.	· Keep the input/output cables and speaker cables away from the power cable..
There is no effect of tone control.	· The line straight switch is set to ON.	· Set the line straight switch to OFF.

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
The loudness function does not work.	· The line straight switch is set to ON.	· Set the line straight switch to OFF.
The external pre switch does not work.	· To prevent malfunction, holding down for approximately 1 second shall be required for switching between ON and OFF in the specifications.	· Hold down the external pre switch for approx. 1 second.

