D00989221C

ESOTERIC

G-0 Rb

Master Clock Generator

Owner's Manual

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

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 to 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 to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT SAFETY INSTRUCTIONS

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

13) Unplug this apparatus during lightning storms or when unused for long periods of time.
14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

- Do not expose this apparatus to drips or splashes.
- Do not place any objects filled with liquids, such as vases, on the apparatus.
- Do not install this apparatus in a confined space such as a book case or similar unit.
- The apparatus draws nominal non-operating power from the AC outlet with its STANDBY/ON switch in the standby position.
- The apparatus should be located close enough to the AC outlet so that you can easily grasp the power cord plug at any time.
- An apparatus with Class I construction shall be connected to an AC outlet with a protective grounding connection.
- Batteries (battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like.
- Excessive sound pressure from earphones and headphones can cause hearing loss.

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

CAUTION

- DO NOT REMOVE THE EXTERNAL CASES OR CABINETS TO EXPOSE THE ELECTRONICS. NO USER SERVICEABLE PARTS ARE WITHIN!
- IF YOU ARE EXPERIENCING PROBLEMS WITH THIS PRODUCT, CONTACT TEAC FOR A SERVICE REFERRAL. DO NOT USE THE PRODUCT UNTIL IT HAS BEEN REPAIRED.

For U.S.A.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 or relocate the equipment and/or the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION

Changes or modifications to this equipments not expressly approved by TEAC CORPORATION for compliance will void the user's warranty.

For European customers

Disposal of your old appliance

1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC.

2. All electrical and electronic products should be disposed of separately from the municipal waste stream via designated collection facilities appointed by the government or the local authorities.

3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.

4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

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Thank you for choosing Esoteric. Read this manual carefully to get the best performance from this unit.

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Up to 192 kHz Word Sync clock production

With the advent of digital equipment using higher sampling frequencies than ever, 176.4 kHz and 192 kHz word clocks (sync signals) are made available in addition to conventional 44.1 kHz, 48 kHz, 88.2 kHz and 96 kHz clocks.

As an additional plus, the output circuitry consists of 3 separate channels with a total of 6 output terminals, thus offering the capability of handling a variety of audio equipment controlled by different word clocks. Also, each of the 3 output channels is switch-selectable between 1xFs, 2xFs, and 4xFs, so you can, for example, get an 88.2 kHz and a 176.4 kHz machine synchronized by connecting them to the single G-0Rb.

Clocks Generated by Internal High-precision Oscillator

The G-0Rb uses an advanced rubidium oscillator (monthly precision variation: projected within ±0.05ppb) that generates astonishingly super-accurate clocks.

Ready for connection to external oscillators

Clocks can also be generated by inputting an external 10 MHz reference signal. This system can be further upgraded by connecting, for example, an ultra-high-precision cesium atomic oscillator used in special applications.

Universal Clock Output

A universal clock output (100 kHz) has been provided for Esoteric's original format (96 kHz in the case of PAL-FILM operation). Connection with a universal clock-compatible device makes it possible to support various frequency sources.

PAL Film Source-capable Clock Frequencies

The PAL (European TV format) film source is a better image quality than NTSC discs provide. However, PAL video system is standardized at 25 frames per second while the PAL film source discs use the rate of 24 frames per second. So, if these discs are played back without inserting one additional frame per second in the process of conversion, the sound pitch may be higher than is expected. To play PAL film source material correctly, it is necessary to reduce the play speed by 4% and play at 24 frames per second. To meet this requirement, the G-0Rb is designed to output clock frequencies of 96% of 48/96/192 kHz (i.e., 46.08/92.16/184.32 kHz).

To play PAL film source material, connect the Esoteric UX-1 Pi or any other Universal Player that is equipped to accept 96% clock frequencies.

Super-rigid Chassis to Ensure Uncompromised Sound Quality

A rigid chassis featuring a total weight of 18 kg (40 pounds) helps to provide a stabilized platform for the clock operation.

- 5-mm thick steel base plate completely eliminates external vibrations.
- Triangular pinpoint feet composed of case-hardened tool steel ensures enhanced stability against vibration.

Employs carefully selected highest quality components

Tight-tolerance components are carefully hand-picked and secured to the rugged chassis to support the high-precision clock operation.

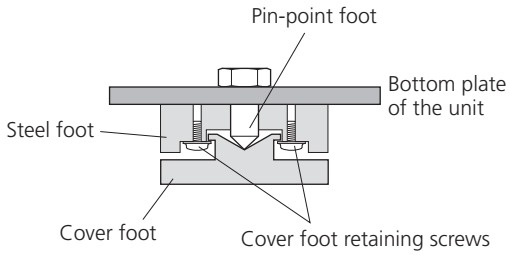
Read this before operation

- As the unit may become warm during operation, always leave sufficient space around the unit for ventilation.
- The voltage supplied to the unit should match the voltage as printed on the rear panel. If you are in any doubt regarding this matter, consult an electrician.
- Choose the installation location of your unit carefully. Avoid placing it in direct sunlight or close to a source of heat. Also avoid locations subject to vibrations and excessive dust, heat, cold or moisture.
- Do not place the unit on the amplifier/receiver.
- Do not open the cabinet as this might result in damage to the circuitry or electrical shock. If a foreign object should get into the unit, contact your dealer or service company.
- When removing the power plug from the wall outlet, always pull directly on the plug, never yank the cord.
- Do not attempt to clean the unit with chemical solvents as this might damage the finish. Use a clean, dry cloth.
- Keep this manual in a safe place for future reference.

Placement of the unit

High-quality hardened tool steel is used for the pin-point feet, securely attached to the bottom of the player. Although the cover feet may appear loose, the weight of the unit causes them to be firm and secure, and the design effectively damps and reduces vibration.

- Be careful to avoid injury when moving the unit, on account of its weight. Get someone to help you if necessary.
- To protect easily scratched furniture, you may stick the felt supplied with the unit to the feet.



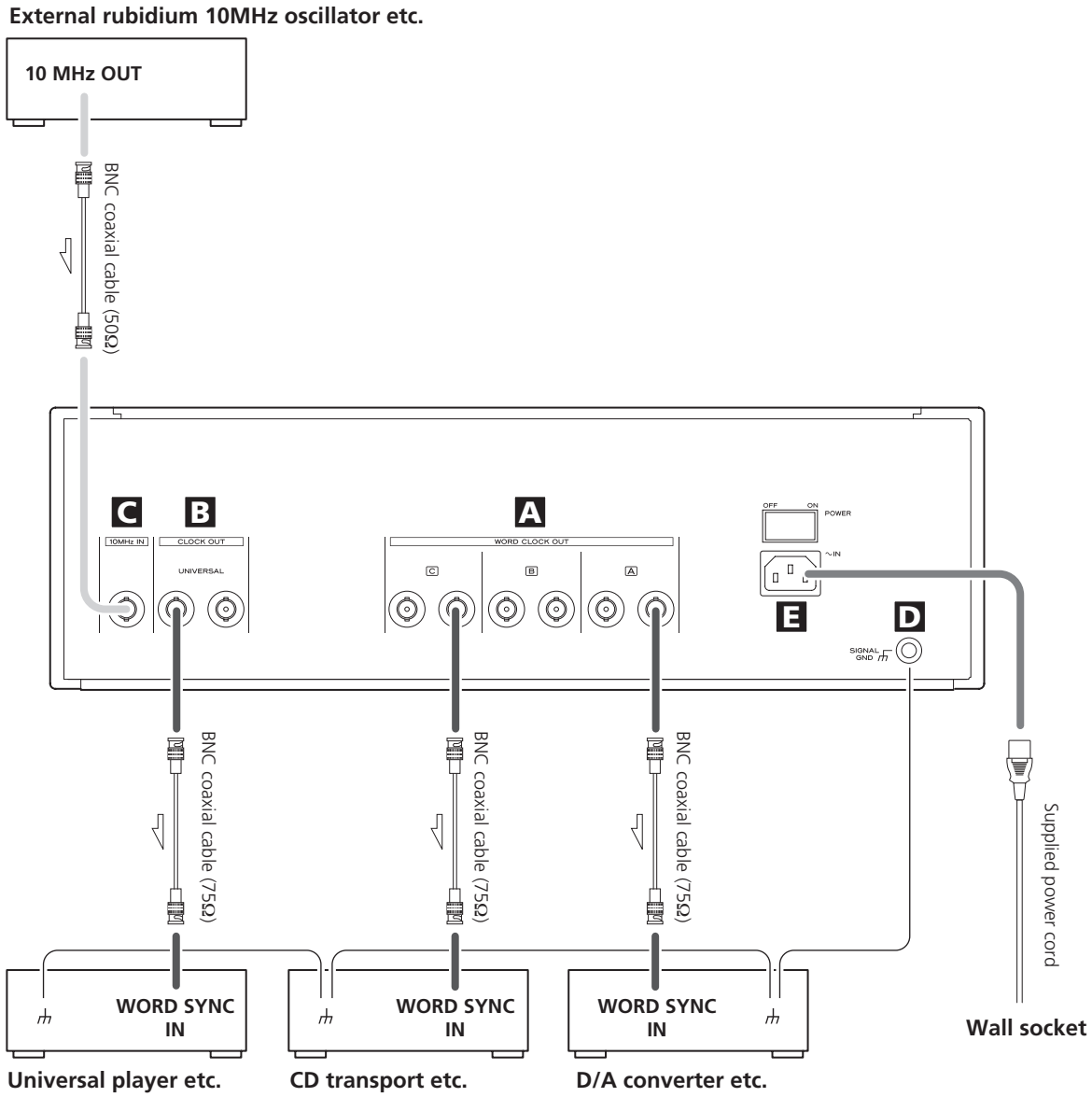
Maintenance

If the surface of the unit gets dirty, wipe with a soft cloth or use diluted neutral cleaning liquid. Be sure to remove any fluid completely. Do not use thinner, benzine (naphtha) or alcohol as they may damage the surface of the unit.

Connection

CAUTION:

- Switch off the power to all equipment before making connection.
- Read the instructions of each component you intend to use with this unit.
- For other connections, read the instructions of each component you intend to use with this unit.



A WORD CLOCK OUT terminals

These terminals output precise word synchronization signals. Connect these OUT terminals to the WORD SYNC IN terminals of the other digital equipment (CD player, D/A converter, etc.), using a commercially available BNC coaxial cable.

- Each of the A, B, and C channels is switch-selectable between 1xFs, 2xFs, and 4xFs. So you can, for example, connect an 88.2 kHz and a 176.4 kHz machine to the single G-0Rb and synchronize them. Three buttons (A, B, and C) are provided on the front panel for each channel.

B UNIVERSAL CLOCK OUT terminal

Universal clock signal is an original synchronization format developed by Esoteric.
These terminals output universal clock signals. Connect these OUT terminals to the WORD SYNC IN terminals of the other matched equipment (UX-1 Pi, P-01,etc.), using a commercially available BNC coaxial cable (75 ohms).

- Although the CD and Super Audio CD frequencies are multiples of 44.1 kHz while the DVD frequency is a multiple of 48 kHz, the universal clock enables compatibility with any disc. The lack of the need to switch the frequency mode for each disc results in considerable convenience.

- Please refer to the manual or other references in advance to determine whether or not the connected device is compatible with a universal clock (100 kHz).
  The following models are not compatible with a universal clock:
  P-0, P-0s, P-70, P-70 (upgraded), D-70, D-70 (upgraded)

C 10MHz IN terminal

You can use the input of external 10MHz reference frequency. Connect this terminal to the output terminal of the external 10MHz oscillator. Use a commercially available BNC coaxial cable for connection.

- If the output level of the oscillator is outside the allowable input range of this unit, the oscillator cannot be used. Refer to the oscillator manual for information on the output level and accuracy of the oscillator.

D SIGNAL GND connection

Audio quality might be slightly improved by connecting the SIGNAL GND terminal of another device using commercially available vinyl-coated wire.

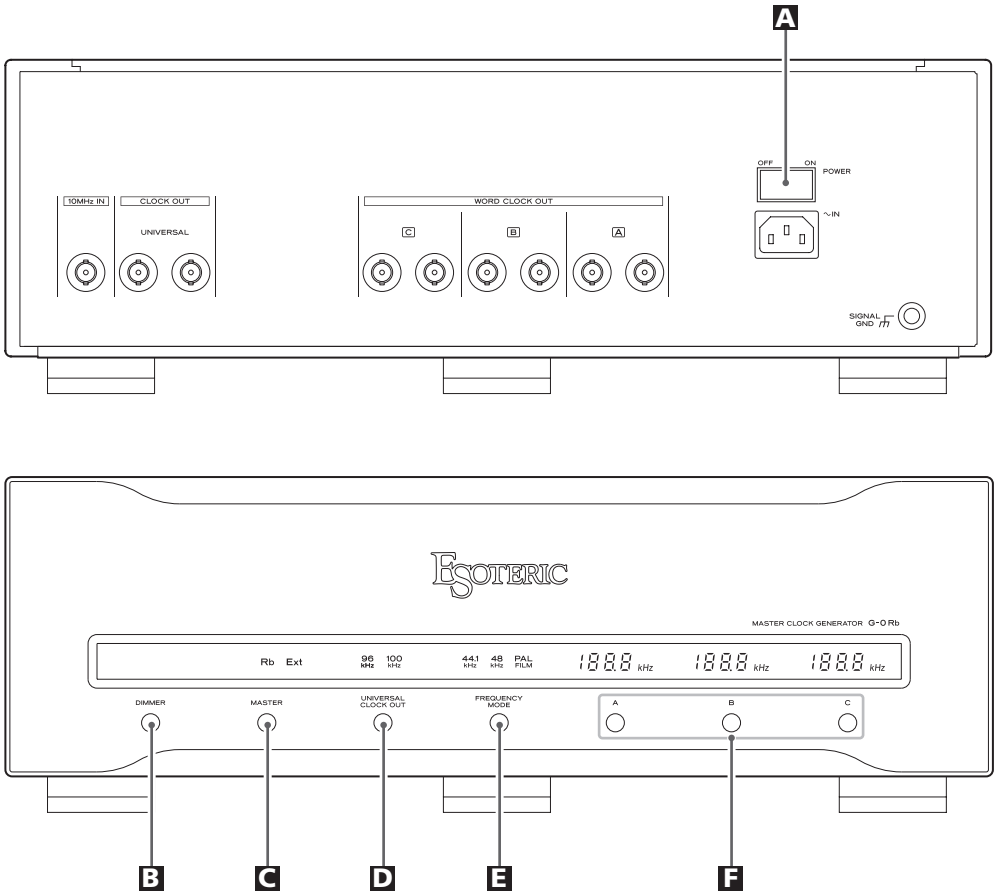
- Note that this is NOT an electrical safety ground (earth).

E Power cord receptacle

After all other connections have been made, insert the supplied AC power cord into this receptacle, then connect the other end of the power cord into the wall socket.

- Ensure that your AC voltage corresponds to the voltage marked on the rear panel of the unit. Consult a qualified electrician if you are in doubt.

- Use only the supplied Esoteric power cord. Use of other power cords may result in fire or electric shock. Unplug the power cord when you are not going to use the unit for an extended period of time.



A POWER switch

Use this switch to turn the unit on and off.

- When the G-0Rb is turned on, the process of pre-heating the rubidium oscillator to its operating temperature gets started. It takes several minutes before the oscillator is ready for operation.

B DIMMER button

Press this button to dim the display on the front panel to suit the environment in which you listen to music.

Full brightness (normal mode)
↓
Medium brightness
↓
Minimum brightness
↓

All the illuminations are turned off except the MASTER button indicator ("Rb" and "Ext").

- This setting is stored even when power is turned off and the unit is unplugged.
- When you turn on the power or you operate other buttons, the display temporarily lights at full brightness. It is dimmed after the clock signal is stabilized (after the indicator for the MASTER button stops blinking and lights steadily).

C MASTER button

Press this button to select the signal source you will use for the reference frequency.
When the clock signal is stabilized, the indicator for the MASTER button stops blinking and lights steadily.

Rb:
When using the internal rubidium oscillator as the source clock

Ext:
When using the input from the reference sourced 10MHz IN terminal

D UNIVERSAL CLOCK OUT button

Use this to switch the Universal Clock output on or off.
Universal Clock is the TEAC-ESOTERIC original clock for universal players.
When the FREQUENCY MODE is set to 44.1kHz or 48kHz, the frequency of the universal clock is set to 100kHz. When the FREQUENCY MODE is set to PAL FILM, the frequency of the universal clock is set to 96kHz.
When OFF is selected, the indicator turns off.

E FREQUENCY MODE button

Use this to select the fundamental frequency of the word clock.

44.1kHz:
Select this for playback of CD, Super Audio CD, etc.

48kHz:
Select this for playback of DVD, DAT, etc.

PAL FILM:
This is used for reproducing PAL DVD discs at 24 frames/sec.

F Frequency change buttons [A/B/C]

The frequency of the each line (A/B/C) is changeable between 1x/2x/4x of the fundamental frequency and off.
Following frequency can be selected for each FREQUENCY MODE.
When OFF is selected, the indicator turns off.

44.1kHz:
44.1kHz, 88.2kHz, 176.4kHz
48kHz:
48kHz, 96kHz, 192kHz
PAL FILM:
48P (46.08kHz), 96P (92.16kHz), 192P (184.32kHz)

Specifications

Clock outputs

44.1 kHz lines	44.1 kHz, 88.2 kHz, 176.4 kHz
48 kHz lines	48 kHz, 96 kHz, 192 kHz
PAL FILM lines	46.08 kHz, 92.16kHz, 184.32 kHz
UNIVERSAL CLOCK lines	100 kHz, 96 kHz
Terminals	BNC coaxial
Output	rectangular wave (TTL level/75Ω)
Accuracy	Under ±0.05ppb (factory setting, ppb: 10^{-9})

Stabilized time of the output clock

When the G-0Rb is turned on	10 minutes
When the MASTER button or the FREQUENCY MODE button is pressed	Less than 10 seconds

Frequency input

Frequency	10 MHz (under ±10 ppm)
Terminal	BNC coaxial
Input level	Sine wave: 0.5 - 1.0 Vrms/50Ω Rectangular wave: 1.5 - 2.5 Vpp/50Ω

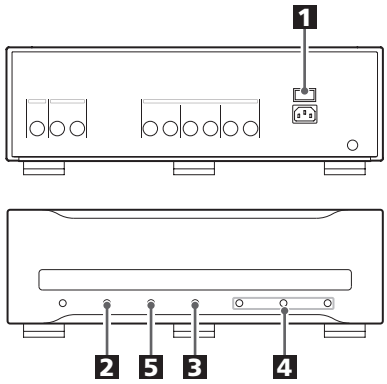
General

Power supply	
Europe model	AC 230 V, 50 Hz
U.S.A./Canada model	AC 120 V, 60 Hz
Korea model	AC 220 V, 60 Hz
Power consumption	81 W (maximum), 33 W (nominal)
Weight	18 kg (39 11/16 lbs)
External dimensions (W x H x D)	442 x 153 x 351 mm (17 3/8" x 6" x 13 13/16")
Operating temperature	+5˚C - +35˚C

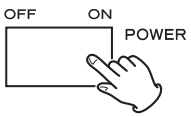
Accessories

Power cord x 1
Felt x 3
Warranty card x 1
Owner's manual x 1

- Design and specifications are subject to change without notice.
- Weight and dimensions are approximate.
- Illustrations may differ slightly from production models.



1 Turn the G-0Rb on.



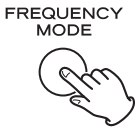
Display and indicators on the front panel light up.

2 Press the MASTER button to select which oscillator you will use for the reference frequency.

Rb:
Select this to use the internal rubidium oscillator as the source clock.

Ext:
Select this to use the input from the reference sourced 10MHz IN terminal

3 Select the appropriate frequency mode using the FREQUENCY MODE button.



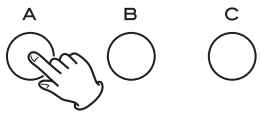
44.1kHz:
Select this for playback of CD, Super Audio CD, etc.

48kHz:
Select this for playback of DVD, DAT, etc.

PAL FILM:
This is used for reproducing PAL DVD discs at 24 frames/sec.

- When only using the UNIVERSAL CLOCK OUT terminal, either 44.1 kHz or 48 kHz may be selected.
- Before you set PAL FILM mode, confirm that the connected unit can be synchronized with the frequency of PAL FILM.

4 If your units are connected to the WORD SYNC OUT terminals, select the frequency of the word clock for each line by pressing the A, B or C button.



- Set the frequency as high as the connected units will allow for synchronization.

Note:
Select 44.1 kHz for the P-0 or P-0s.
Select 88.2 kHz for the P-70.

5 If your units are connected to the UNIVERSAL CLOCK OUT terminals, press the UNIVERSAL CLOCK OUT button to turn it on.

"100 kHz" lights when you set the master mode to 44.1kHz or 48kHz. "96 kHz" lights when you set the master mode to PAL FILM.

6 Set the connected units to the slave mode (word synchronization input mode).

Read the instructions of each component to turn Word Sync on.

Example:

D-01: select "Rb IN" using the WORD button.

D-70 upgraded: select "WORD+RAM" using the CLOCK MODE switch (front panel), then select "IN M1" using the remote control unit.

P-01: select "Rb IN" using the WORD button.

P-70/P-70 upgraded: turn ON the WORD SYNC switch (front panel), then set the PLL filter switch (back panel) to "MODE2".

X-01: select "Word M1 ON" using the CLOCK MODE button.

NOTE:
If you connect this unit to other manufacturers units, be sure to read the manuals of those devices to confirm the frequency range of synchronization.

Dual AES connection will require you to set the clock frequency at one half of the audio signal frequency.

- Settings are stored even when power is turned off and the unit is unplugged.
- When not in use turn off the power switch on the back of the unit.
- Once settings have been made, those settings can be used simply by turning on the power the next time the unit is used. Switch the frequency mode using the FREQUENCY MODE button depending on the disc to be played or device.
- Although the CD and Super Audio CD frequencies are multiples of 44.1 kHz while the DVD frequency is a multiple of 48 kHz, the universal clock enables compatibility with any disc. The lack of the need to switch the frequency mode for each disc results in considerable convenience.

Troubleshooting

In case you experience any problem with this unit, please take the time to look through this chart and see if you can solve the problem yourself before you call your dealer.

No power

➜ Check the connection to the AC power supply. Check and make sure the AC source is not a switched outlet and that, if it is, the switch is turned on. Make sure there is power to the AC outlet by plugging another item such as a lamp or fan.

➜ Turn on the POWER switch on the rear panel.

Not synchronized

➜ Check to see if the current word clock output is supported by the connected players. If necessary, select a word clock frequency that is appropriate for the individual players.
There are occasions where the word clock available for synchronization varies depending on the connection and settings of the individual players. For details, consult the manual for each player.

➜ If you are using the PAL FILM mode, check to see whether the connected player supports the PAL FILM frequency (-4% of the standard frequency).

➜ Check to see whether the sync outputs on the rear panel are connected to the acceptable sync inputs of the individual players.

Desired frequency not selectable with A, B, and C buttons

➜ Select the proper fundamental frequency in FREQUENCY MODE before operating the buttons.

Odd sound pitch

➜ Do not use the PAL FILM mode for NTSC discs or PAL discs other than film source discs.

If normal operation cannot be obtained, unplug the power cord from the outlet and plug it again. This resets the internal micro-computer which can be disturbed during electrical storms, power interruptions, et cetera.

ESOTERIC

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This appliance has a serial number located on the rear panel. Please record the model number and serial number and retain them for your records.

Model number Serial number

0108·MA-1202C