Digital Snake

# 4-CHANNEL DIGITAL OUTPUT MODULE

# SO-AES4

# Owner's Manual

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## Note, Memo and Hint Icons

Throughout the SO-AES4 Owner's manual, you'll occasionally come to areas that provide extra information related to the feature or operation described in the main text. The symbols in the right-hand margin define the nature of this extra information.

NOTE

A warning contains important information that will help you avoid damage to the SO-AES4, other equipment, or yourself.

MEMO

A note is something that adds information about the topic at hand.

HINT

A tip offers suggestions for using the feature being discussed.

**Before using this unit, carefully read the sections entitled: "USING THE UNIT SAFELY" (SO-AES4 Owner's Manual p. 2) and "IMPORTANT NOTES" (SO-AES4 Owner's Manual p. 3) These sections provide important information concerning the proper operation of the unit. Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, the SO-AES4 Owner's Manual and the S-4000S Owner's Manual should be read in their entirety. This manual should be saved and kept on hand as a convenient reference.**


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# USING THE UNIT SAFELY

## INSTRUCTIONS FOR THE PREVENTION OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

About ⚠WARNING and ⚠CAUTION Notices

| | |
|---|---|
| **⚠WARNING** | Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly. |
| **⚠ CAUTION** | Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly.<br>* Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets. |

About the Symbols

| | |
|---|---|
| ⚠ | The △ symbol alerts the user to important instructions or warnings.The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger. |
| | The ⃠ symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled. |
| | The ● symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the power-cord plug must be unplugged from the outlet. |

## ALWAYS OBSERVE THE FOLLOWING

### ⚠WARNING

- Do not open or perform any internal modifications on the unit.

- The S-4000S should be used only with a rack that is recommended by Roland.

- When using the S-4000S unit with a rack recommended by Roland, the rack must be carefully placed so it is level and sure to remain stable. If not using a rack, you still need to make sure that any location you choose for placing the unit provides a level surface that will properly support the unit, and keep it from wobbling.

### ⚠ CAUTION

- Keep the included ferrite cores in a safe place out of children's reach, so there is no chance of them being swallowed accidentally.

# IMPORTANT NOTES

**In addition to the items listed under "USING THE UNIT SAFELY" on page 2, please read and observe the following:**

## Additional Precautions

- When you need to transport the unit, pack it in shock-absorbent material. Transporting the unit without doing so can cause it to become scratched or damaged, and could lead to malfunction.

## Copyright

- Do not use this unit for purposes that could infringe on a copyright held by a third party. We assume no responsibility whatsoever with regard to any infringements of third-party copyrights arising through your use of this unit.

# Before You Use the Unit

## For the Purchaser — Please Read

The SO-AES4 is not user installable. Installation must be carried out by an authorized Roland Service Technician.

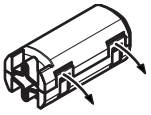
## Checking the Included Items

- SO-AES4

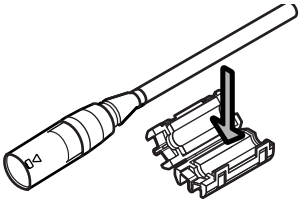
  This is a 4-channel digital output module for the S-4000S. It provides for the output of digital audio that complies with the AES/EBU standard.
- Ferrite cores (2)
- BNC cable

## How to Use the Ferrite Cores

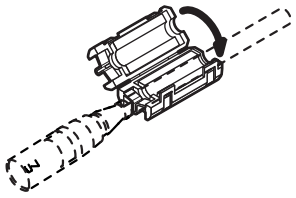
**1. Spread open the tabs and open the ferrite core.**



**2. Attach the ferrite core near the XLR connector on the AES/EBU cable.**



**3. Close the ferrite core by squeezing together the two halves until you hear them click into place.**

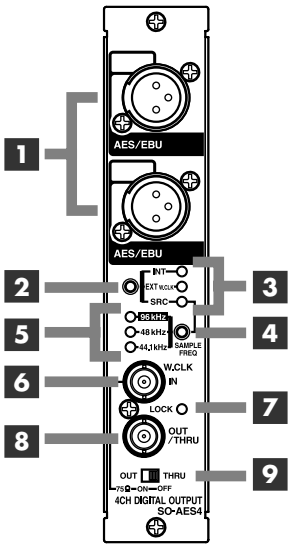


**4. Connect the plug that has the ferrite core attached near it to the AES/EBU connector on the SO-AES4.**

## Main Features

- 4-channel output of AES/EBU-compliant digital audio
- Built-in sample rate converter providing high sound quality
- Word-clock input and output connectors for support for synchronization with an external word clock and synchronization with multiple SO-AES4 modules
- Support for a variety of sampling frequencies, up to a maximum of 96 kHz

# Names of Things and What They Do




## 1

### AES/EBU output jacks

These jacks are for output of digital audio conforming to the AES/EBU standard. Use cables that meet AES/EBU standards.

MEMO

The SO-AES4 does not support double-wire operation.

## 2

### Clock-source switch

This switches the word-clock source. The clock-source indicator displays the current word-clock source.

NOTE

Changing clock source or sampling frequency may cause noise. To avoid the noise, please use [MUTE ALL OUTPUTS] button on the S-4000S while changing clock source or sampling frequency.

## 3

### Clock-source indicator

This indicates the current word-clock source.

| Display | Description |
|---|---|
| INT | S-4000S internal clock (fixed at 96 kHz) |
| EXT (W.CLK) | Word clock input to the WORD CLK input jack (maximum 96 kHz) |
| SRC | SO-AES4 internal clock (switchable to 44.1 kHz, 48 kHz, or 96 kHz) |

## 4

### Sampling-frequency switch

This changes the sampling frequency when the clock source is SRC.

The current sampling frequency is displayed by the sampling-frequency indicator.

MEMO

To change the switch setting, use a blunt-tipped instrument such as a ball-point pen, mechanical pencil, etc.

## 5

### Sampling-frequency indicator

This indicates the current sampling frequency.

## 6

### Word-clock input jack

This is a BNC connector for input of an external word clock. It supports sampling frequencies up to a maximum of 96 kHz.

MEMO

A signal level of word-clock source must be within 5Vp-p± 5%.

## 7

### LOCK indicator

This indicates whether correct synchronization to an external word clock is in effect.

| Display | Description |
|---|---|
| Lighted | Correctly synchronized |
| Flashing | Unable to synchronize |
| Unlit | No input |

HINT

If the LOCK indicator flashes and correct synchronization is impossible, check the connection with the word-clock source device, its sampling frequency, and the like.

HINT

If the LOCK indicator is unlit and synchronization is impossible, check for a broken cable and make sure the word-clock source device is working correctly.

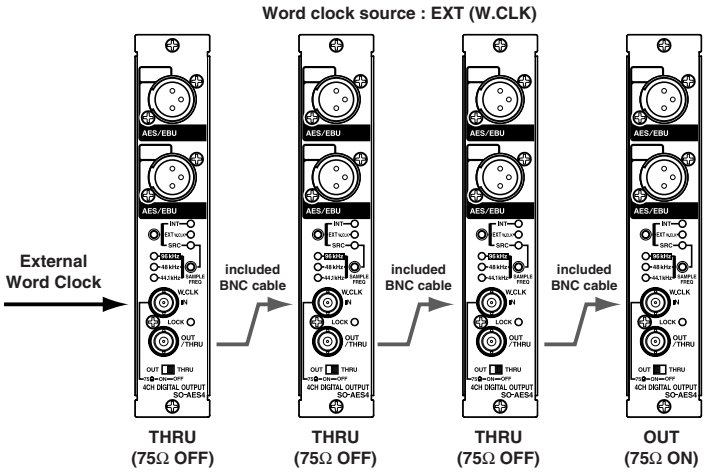
## 8

### Word-clock output/thru jack

This is a BNC connector for output of the internal clock (INTERNAL or SRC) or for passing through an external word clock.

When synchronizing multiple SO-AES4 modules, use the included BNC cables to connect the SO-AES4 modules to one another.

Shown below is an example of synchronization of multiple SO-AES4 modules to an external word clock.




## 9

### Word-clock output/thru switch (word-clock input terminal-resistor switch)

This switches the functioning of the word-clock OUT/THRU jack.

Also, when the SO-AES4 is functioning as a terminal for an external word clock, setting the switch to OUT (75Ω ON) enables the terminal resistor and prevents signal reflection.

| State | Description |
|---|---|
| OUT (75Ω ON) | Internal clock (S-4000S, SO-AES4) is output (75Ω terminal resistor enabled) |
| THRU (75Ω OFF) | External word clock allowed to pass through (75Ω terminal resistor disabled) |

HINT

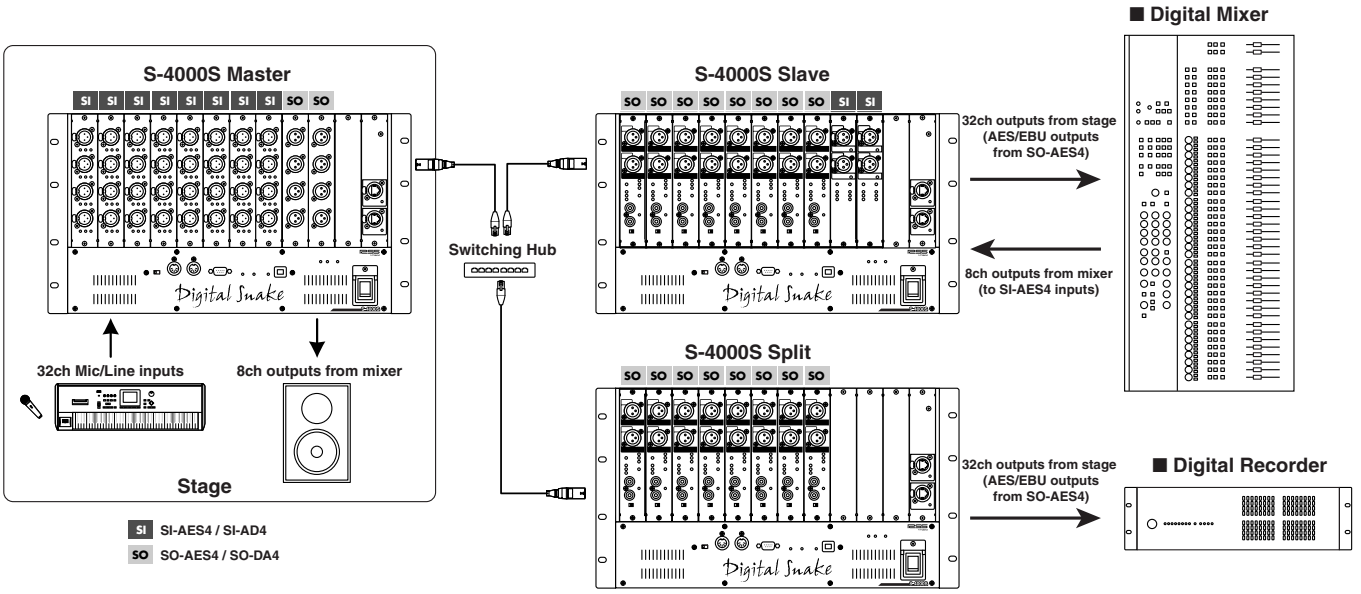
When the SO-AES4 is functioning as an external word-clock terminal, set the word-clock output/thru (OUT/THRU) switch to "OUT (75Ω ON)."

The settings for the clock source and the sampling frequency are stored in memory on the S-4000 unit.These settings are read automatically after a REAC link has been established.

Operation using the S-4000R remote controller or the S-4000RCS remote-control software is supported for storing and recalling of memory or scenes.

# Applications

This shows a connection example for sending microphone and line inputs from the stage (32 channels) to a digital mixer and digital recording device via AES/EBU, and providing line outputs on the stage for AES/EBU outputs from the digital mixer.



# Specifications

## SO-AES4 4-CHANNEL DIGITAL OUTPUT MODULE

**Number of channels**

4 (All with sample rate conversion)

**Format**

AES/EBU (Professional Use) IEC60958-4 (Professional Use) *1

**Data length**

24 bits

**Connectors**

XLR3-32 type, W.CLK-IN/OUT: BNC Type

**Indicators**

Clock Source (INT, EXT, SRC)

**LOCK (W.CLK)**

Sampling Frequency (96kHz, 48kHz, 44.1kHz)

**Dimensions**

34.5 (W) x 266.0 (D) x 177.0 (H) mm

1-3/8 (W) x 10-1/2 (D) x 7 (H) inches

**Weight**

600 g

1 lb 6 oz

**Operation Temperature**

0 to +40 degrees centigrade

+32 to +104 degrees Fahrenheit

**Accessories**

BNC Cable

Ferrite Cores

Owner's Manual

* *1: The double wire method doesn't operate.*

# MEMO

**For EU Countries**

**UK** This symbol indicates that in EU countries, this product must be collected separately from household waste, as defined in each region. Products bearing this symbol must not be discarded together with household waste.

**DE** Dieses Symbol bedeutet, dass dieses Produkt in EU-Ländern getrennt vom Hausmüll gesammelt werden muss gemäß den regionalen Bestimmungen. Mit diesem Symbol gekennzeichnete Produkte dürfen nicht zusammen mit den Hausmüll entsorgt werden.

**FR** Ce symbole indique que dans les pays de l'Union européenne, ce produit doit être collecté séparément des ordures ménagères selon les directives en vigueur dans chacun de ces pays. Les produits portant ce symbole ne doivent pas être mis au rebut avec les ordures ménagères.

**IT** Questo simbolo indica che nei paesi della Comunità europea questo prodotto deve essere smaltito separatamente dai normali rifiuti domestici, secondo la legislazione in vigore in ciascun paese. I prodotti che riportano questo simbolo non devono essere smaltiti insieme ai rifiuti domestici. Ai sensi dell'art. 13 del D.Lgs. 25 luglio 2005 n. 151.

**ES** Este símbolo indica que en los países de la Unión Europea este producto debe recogerse aparte de los residuos domésticos, tal como esté regulado en cada zona. Los productos con este símbolo no se deben depositar con los residuos domésticos.

**PT** Este símbolo indica que nos países da UE, a recolha deste produto deverá ser feita separadamente do lixo doméstico, de acordo com os regulamentos de cada região. Os produtos que apresentem este símbolo não deverão ser eliminados juntamente com o lixo doméstico.

**NL** Dit symbool geeft aan dat in landen van de EU dit product gescheiden van huishoudelijk afval moet worden aangeboden, zoals bepaald per gemeente of regio. Producten die van dit symbool zijn voorzien, mogen niet samen met huishoudelijk afval worden verwijderd.

**DK** Dette symbol angiver, at i EU-lande skal dette produkt opsamles adskilt fra husholdningsaffald, som defineret i hver enkelt region. Produkter med dette symbol må ikke smides ud sammen med husholdningsaffald.

**NO** Dette symbolet indikerer at produktet må behandles som spesialavfall i EU-land, iht. til retningslinjer for den enkelte regionen, og ikke kastes sammen med vanlig husholdningsavfall. Produkter som er merket med dette symbolet, må ikke kastes sammen med vanlig husholdningsavfall.

**SE** Symbolen anger att i EU-länder måste den här produkten kasseras separat från hushållsavfall, i enlighet med varje regions bestämmelser. Produkter med den här symbolen får inte kasseras tillsammans med hushållsavfall.

**FI** Tämä merkintä ilmaisee, että tuote on EU-maissa kerättävä erillään kotitalousjätteistä kunkin alueen voimassa olevien määräysten mukaisesti. Tällä merkinnällä varustettuja tuotteita ei saa hävittää kotitalousjätteiden mukana.

**HU** Ez a szimbólum azt jelenti, hogy az Európai Unióban ezt a terméket a háztartási hulladéktól elkülönítve, az adott régióban érvényes szabályozás szerint kell gyűjteni. Az ezzel a szimbólummal ellátott termékeket nem szabad a háztartási hulladék közé dobni.

**PL** Symbol oznacza, że zgodnie z regulacjami w odpowiednim regionie, w krajach UE produktu nie należy wyrzucać z odpadami domowymi. Produktów opatrzonych tym symbolem nie można utylizować razem z odpadami domowymi.

**CZ** Tento symbol udává, že v zemích EU musí být tento výrobek sbírán odděleně od domácího odpadu, jak je určeno pro každý region. Výrobky nesoucí tento symbol se nesmí vyhazovat spolu s domácím odpadem.

**SK** Tento symbol vyjadruje, že v krajinách EÚ sa musí zber tohto produktu vykonávať oddelene od domového odpadu, podľa nariadení platných v konkrétnej krajine. Produkty s týmto symbolom sa nesmú vyhadzovať spolu s domovým odpadom.

**EE** See sümbol näitab, et EL-i maades tuleb see toode olemprügist eraldi koguda, nii nagu on igas piirkonnas määratletud. Selle sümboliga märgitud tooteid ei tohi ära visata koos olmeprügiga.

**LT** Šis simbolis rodo, kad ES šalyse šis produktas turi būti surenkamas atskirai nuo buitinių atliekų, kaip nustatyta kiekviename regione. Šiuo simboliu paženklinti produktai neturi būti išmetami kartu su buitinėmis atliekomis.

**LV** Šis simbols norāda, ka ES valstīs šo produktu jāievāc atsevišķi no mājsaimniecības atkritumiem, kā noteikts katrā reģionā. Produktus ar šo simbolu nedrīkst izmest kopā ar mājsaimniecības atkritumiem.

**SI** Ta simbol označuje, da je treba proizvod v državah EU zbirati ločeno od gospodinjskih odpadkov, tako kot je določeno v vsaki regiji. Proizvoda s tem znakom ni dovoljeno odlagati skupaj z gospodinjskimi odpadki.

**GR** Το σύμβολο αυτό υποδηλώνει ότι στις χώρες της Ε.Ε. το συγκεκριμένο προϊόν πρέπει να συλλέγεται χωριστά από τα υπόλοιπα οικιακά απορρίμματα, σύμφωνα με όσα προβλέπονται σε κάθε περιοχή. Τα προϊόντα που φέρουν το συγκεκριμένο σύμβολο δεν πρέπει να απορρίπτονται μαζί με τα οικιακά απορρίμματα.

# Information

When you need repair service, call your nearest Roland Service Center or authorized Roland distributor in your country as shown below.

## ASIA

### INDONESIA
**PT. Citra IntiRama**
JL. Cideng Timur No. 15J-15O
Jakarta Pusat
INDONESIA
TEL: (021) 632-4170

### TAIWAN
**ROLAND TAIWAN ENTERPRISE CO., LTD.**
Room 5, 9fl. No. 112 Chung Shan N.Road Sec.2, Taipei, TAIWAN, R.O.C.
TEL: (02) 2561 3339

### SINGAPORE/ MALAYSIA
**Roland Asia Pacific Sdn. Bhd.**
45-1, Block C2, Jalan PJU 1/39,
Dataran Prima, 47301 Petaling Jaya, Selangor, MALAYSIA
TEL: 3-7805-3263

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### BRAZIL
**Roland Brasil Ltda.**
Rua San Jose, 780 Sala B
Parque Industrial San Jose
Cotia - Sao Paulo - SP, BRAZIL
TEL: (011) 4615 5666

### Other CENTRAL/ LATIN AMERICA
**Roland Systems Group U.S.**
425 Sequoia Drive Suite 114,
Bellingham, Washington,
98226 USA
TEL: 360-594-4282

## EUROPE

### AUSTRIA/BELGIUM/ FRANCE/GERMANY/ HOLLAND/ LUXEMBOURG/ PORTUGAL/SPAIN/ SWITZERLAND
**Roland Iberia, S.L.**
Paseo García Faria, 33-35
08005 Barcelona SPAIN
TEL: 93 493 91 00

### CROATIA
**ART-CENTAR**
Degenova 3.
HR - 10000 Zagreb
TEL: (1) 466 8493

### CZECH REP.
**CZECH REPUBLIC DISTRIBUTOR s.r.o**
Voctárova 247/16
CZ - 180 00 PRAHA 8,
CZECH REP.
TEL: (2) 830 20270

### DENMARK
**Roland Scandinavia A/S**
Nordhavnsvej 7, Postbox 880,
DK-2100 Copenhagen
DENMARK
TEL: 3916 6200

### FINLAND
**Roland Scandinavia As, Filial Finland**
Elannontie 5
FIN-01510 Vantaa, FINLAND
TEL: (0)9 68 24 020

### HUNGARY
**Roland East Europe Ltd.**
Warehouse Area 'DEPO' Pf.83
H-2046 Torokbalint, HUNGARY
TEL: (23) 511011

### NORWAY
**Roland Scandinavia Avd. Kontor Norge**
Lilleakerveien 2 Postboks 95
Lilleaker N-0216 Oslo
NORWAY
TEL: 2273 0074

### POLAND
**ROLAND POLSKA SP. Z O.O.**
UL. Gibraltarska 4.
PL-03664 Warszawa POLAND
TEL: (022) 679 44 19

### ROMANIA
**FBS LINES**
Piata Libertatii 1,
535500 Gheorgheni, ROMANIA
TEL: (266) 364 609

### RUSSIA
**MuTek**
Dorozhnaya ul.3,korp.6
117 545 Moscow, RUSSIA
TEL: (095) 981-4967

### SLOVAKIA
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Povazská 18.
SK - 940 01 Nové Zámky
TEL: (035) 6424 330

### SWEDEN
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S-131 30 Nacka SWEDEN
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### UKRAINE
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UA - 89600 Mukachevo,
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