

# D/A CONVERTER

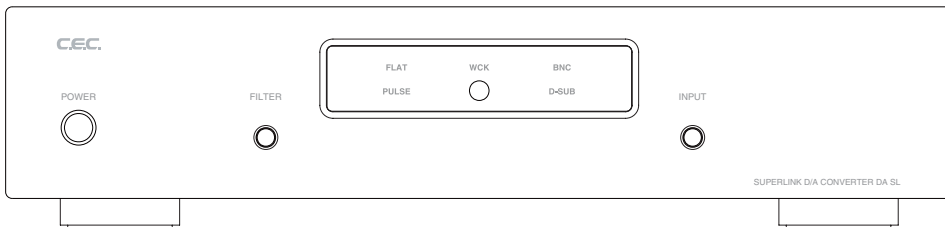
# SuperLink DA SL

## Owner's Manual

Thank you for purchasing a DA SL.

Please read through and refer to this Owner's Manual to use your DA SL safely and adequately.

It is recommended to keep the packaging available for future transportation needs.



# CEC

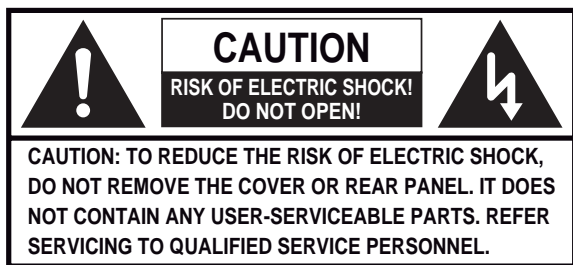
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## Features

- ❑ CEC SUPERLINK connection the original digital transmission way. The DA SL has been designed as the ultimate D/A converter to bring out the full performance of SUPERLINK connection.
- ❑ Two SUPERLINK connections are ready. Four BNC terminals for TL0 3.0, TL1N, TL2N and TL3N, and D-SUB-9 for TL2 and TL51 series. All CEC CD Transports and Players with one of those terminals are available with the SUPERLINK ultra low jitter transmission system.
- ❑ Digital-to-analog conversion is performed by the ESS Hyperstream™ DAC chip 32bit ES9028PRO from the flagship SABRE PRO series. Extra wide dynamic range (NDR) and ultra low total harmonic distortion plus noise (THD+N) result in reproducing music with unbelievable breath and depth of sound stage.
- ❑ SUPERLINK BNC-BCK terminal can be switched to a SPDIF (COAXIAL) input. Upsampled Hi-Res signal by TL2N is also acceptable.

## Important Safety Instructions



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to potential electric shock hazards within the product's enclosure.



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

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

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this appliance near water.
- 6) Clean only with a dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install this appliance near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) (For USA, Canada: ) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades, with one blade wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet. (For European Countries: ) Do not defeat the safety purpose of the grounding-type plug. This plug has two poles and a third grounding hole. The third hole is provided for your safety. If the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.

10) Protect this appliance's power cord from being walked on or pinched, especially around the plugs, convenience receptacles, and where it exits from this appliance's casing.

11) Only use attachments/accessories specified by the manufacturer.

12) Only use this appliance with a cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the appliance. If using a cart, exercise caution when moving the cart/appliance combination to avoid injury from it tipping over.



13) Unplug this appliance during lightning storms or when leaving it unused for extended periods of time.

14) Refer all servicing to qualified service personnel. Servicing is required when this appliance itself, its power-supply cord, or plug has been damaged in any way, when liquids have been spilled onto this appliance, when foreign objects have fallen into this appliance, when this appliance has been exposed to rain or moisture, when this appliance does not operate normally, or when this appliance has been dropped.

### CAUTION:

- Do not expose this appliance to drips or splashes.
- Do not place any objects filled with liquids, such as vases, on this appliance.
- Do not install this appliance in a confined space, such as within a bookcase or similar piece of furniture.
- Plug the ac power cord into an easily accessible ac wall outlet, so it can be quickly unplugged in case of emergency.
- Do not remove the protective housing with a screwdriver.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
- If this appliance seems to be malfunctioning, contact a qualified service station. discontinue use of any malfunctioning unit.

### For CANADA

AC power cord connection

#### Caution:

To prevent electric shock, match the blade width of the plug to the slot width. the plug must be fully inserted to the slot.

## Handling Precautions

### ❶ Connecting Other Devices

Unplug the AC power cord from the outlet before connecting or disconnecting other devices. Exercise caution when handling the AC power cord. When disconnecting the AC cord from a socket, make sure you pull the plug, and not the cord itself.

### ❷ Turning Power On/Off

Your system components should be turned on/off in the following order to avoid generating noise from your speakers and damaging the speakers themselves or other devices:

- Turning power on:** Turn on this appliance before turning on the amplifier connected to this appliance.
- Turning power off:** Turn off the amplifier first, before turning off this appliance.

### ❸ Handle With Care

Avoid exerting excessive force on the cabinet, the switch, the knob, the terminal and the CD-Turntable on this appliance.

### ❹ Installation

Use of an audio rack is recommended to maximize the sound quality and performance of this appliance. Installation and use of this appliance in the locations described below may cause deterioration in sound quality or malfunction:

- Locations exposed to direct sunlight, such as windowsills, and other exceptionally warm locations, such as near heating appliances (surrounding temperature higher than 35 °C), or exceptionally cold locations (surrounding temperature lower than 10 °C), may prevent this appliance from functioning adequately.
- Damp locations exceeding 90% humidity may cause this appliance's metal parts to rust, causing this appliance to malfunction.
- Dusty locations may cause this appliance to malfunction. The accumulation of dust inside the CD tray may lower the performance of music signal reading. It may also cause contact failure of the switches, and/or noise.
- Otherwise, avoid installing this appliance close to other transformers and electrical motors, so as to prevent the pickup of induction hum. Also, avoid mounting this appliance on surfaces that may be affected by vibration.

### ❺ Avoid lightning strikes

Disconnect the AC power cord from the AC outlet when there is a thunderstorm in your vicinity.

### ❻ Condensation

When this appliance is brought into a warm room when the exterior temperature is cold, or when the room temperature rises sharply from using a heater, condensation may form both inside and outside this appliance, hampering its performance. If this happens, leave this appliance unused in the room for 1 to 2 hours (depending on the amount of condensation), so as to bring the temperature of this appliance closer to the room temperature. The condensation should go away gradually.

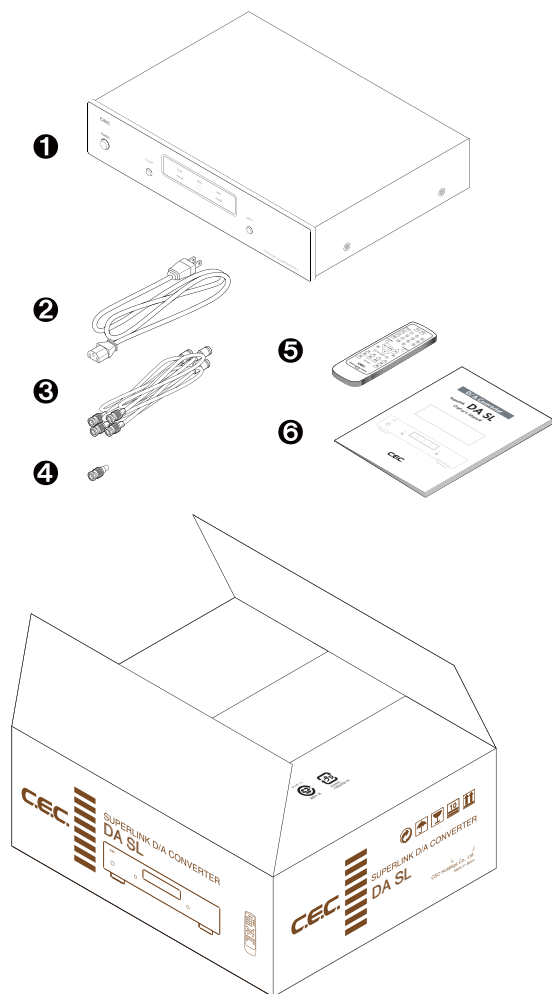
### ❼ Listening etiquette

Make sure your playback sound, ex. due to too big sound, does not disturb other people and your neighborhood.

## Accessories

DA SL should contain the following:

- ❶ DA SL unit
- ❷ AC Power Cord
- ❸ BNC Cable (x 4)
- ❹ BNC - RCA Converter
- ❺ Remote Control unit RU-219
- ❻ Owner's Manual



- Keep the packaging available for future transportation needs.
- The delivered AC power cord should not be used for any other device than DA SL.

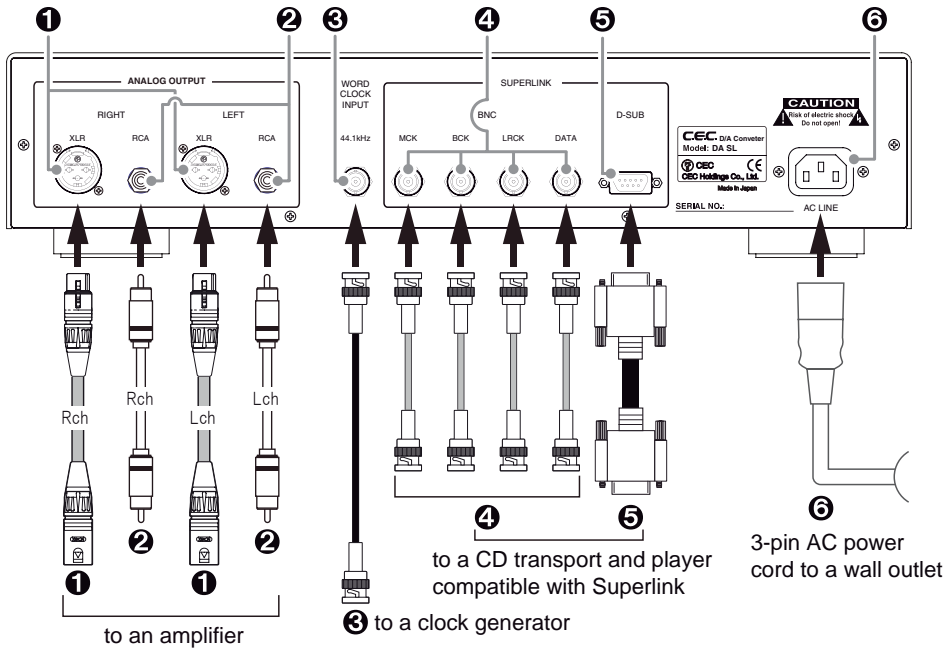
## Specifications

Master clock output	D-SUB-9 (9): 16.9344MHz
	BNC(MCK): 16.9344MHz
Word clock input	BNC: 44.1kHz (to be regenerated for SUPERLINK MCK)
Superlink input	D-SUB-9 (2:BCK, 4:LRCK, 6: DATA): 44.1kHz
	BNC x 3 (BCK, LRCK, DATA): 44.1kHz
SPDIF(COAX) input	BNC x 1(at Superlink BCK terminal): PCM 24bit / 32 to 192kHz
DAC chip	ESS ES9028PRO x 1
Digital filter	Switchable between FLAT and PULSE
Analog output	Balanced XLR-3 (2pin: hot) x 1: 5Vrms
	Unbalanced RCA x 1: 2Vrms
Frequency response	20Hz to 20kHz / $\pm 0$ dB (at CD playback with FLAT filter)
S/N ratio	105dB, 1kHz/0dB
Crosstalk	105dB, 1kHz/0dB
THD	0.014%, 1kHz/0dB
Power supply	AC120V / 230V, 50 / 60Hz specified on rear panel
Power consumption	10W
Dimensions	Approx. 435 (W) x 335 (D) x 103 (H) mm (incl. terminal)
Weight	Approx. 8.2kg
Accessories	AC power cord, 4 BNC cables, BNC-RCA adapter, remote control unit RU-219 and Owner's manual
Color	Silver and Black
Origin	Japan

Compatible CD transport and player per connection	
BNC x 4	TL0 3.0, TL1N, TL2N, TL3N
D-SUB-9	TL2XMKII, TL51, TL51Z, TL51ZMKII, TL51X, TL51XR, TL51XR

- Design and specifications are subject to change without notice.
- Illustrations in the Owner's Manual may deviate from the actual unit due to design improvements.

# Rear Panel Functions and Connections



## Analog output

### ① XLR(Balanced)

Balanced analog output using standard XLR terminals (1=GND, 2=Hot, 3=Cold). This should be the preferred connection since DA SL has been designed as a fully balanced circuit.

### ② RCA(Unbalanced)

Standard RCA analog output terminals.

## WORD CLOCK INPUT 44.1kHz

### ③ BNC

44.1kHz word clock input jack with a BNC connector. Connect to an external clock generator using a BNC (75Ω) cable. When the external word clock is supplied " WCK " is displayed at the front panel window. 44.1kHz word clock is regenerated to 16.9344MHz for the SUPERLINK master clock.

Note: External word clock does not work at the other connection than SUPERLINK.

## SUPERLINK connection

### ④ BNC (MCK, BCK, LRCK, DATA)

CEC's proprietary SUPERLINK interconnection via BNC cables. There are four terminals: DATA, LRCK,

MCK and BCK which should be connected accordingly via 75Ω coaxial BNC cables supplied with DA SL. You may connect with CEC TL0 3.0, TL1N, TL2N and TL3N. When the other BNC cables are used, make sure to select high quality BNC cables with 75Ω. Sampling frequency is fixed at 44.1kHz.

### ⑤ D-SUB

CEC's proprietary SUPERLINK interconnection via D-Sub-9 cable. Connect a CD transport equipped with a D-Sub-9 pin SUPERLINK output like TL51 series.

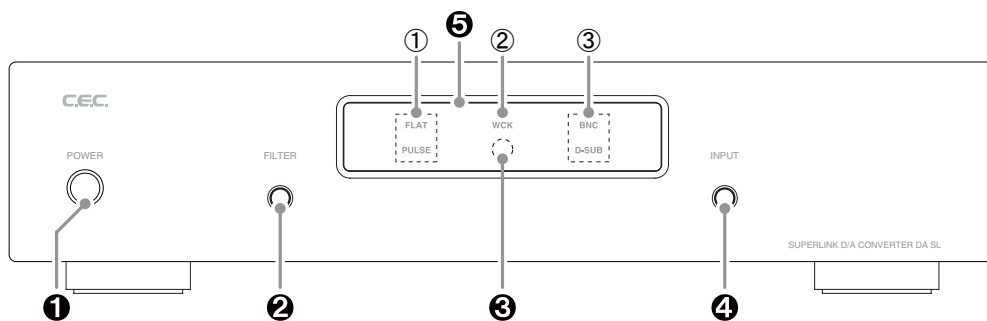
Note: Common D-Sub-9pin cable at computer world cannot be recommended. You may consult with your dealer for CEC recommended cable.

## AC power

### ⑥ AC LINE

Connect the supplied 3-pin AC power cord to the AC LINE inlet and the wall outlet. Connect the supplied 3-pin AC power cord to the AC LINE inlet and the wall outlet.

# Front Panel Functions



## 1 POWER button

Press to turn the power ON or OFF. When DA SL is turned on, the 5 display will blink. Approximately 5 seconds later the display will change to indicate the current function settings and now DA SL is ready for playback.

## 2 FILTER button

Press to select a digital filter type "FLAT" or "PULSE". The selected filter type will light up at 5 - 1 Digital Filter indicator. The last setting has been memorized after power off.

Refer to "Digital Filter" on page 11 for details.

## 3 Remote sensor

The remote sensor, which receives signals from the remote control unit, is located at the right side of the display window. Aim for the sensor when using the remote control unit. The remote control may malfunction if there are any obstacles between the remote control unit and the remote sensor.

## 4 INPUT button

Press to select an input "BNC" or "D-SUB". Pressing the button will toggle the input and the relative input name will light up at 5 - 2 INPUT indicator.

The selected digital input signal is converted and transferred to the analog and headphone outputs.

The last input has been memorized after power off.

## 5 Display

### 1 Digital Filter indicator

A selected digital filter type "PULSE" or "FLAT" lights up. Pressing the 2 FILTER button on the front panel or D.FILTER button on the remote control unit will change the filter.

### 2 WCK (word clock) indicator

"WCK" is displayed when a SUPERLINK input

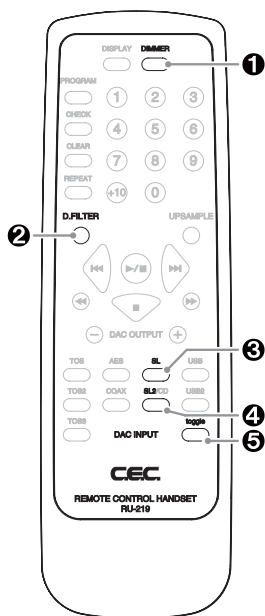
is selected and an external word clock 44.1kHz is connected. The word clock is regenerated to 16.9344MHz for SUPERLINK MCK to be supplied to the CD transport / player.

### 3 INPUT (SUPERLINK terminal) indicator

A selected SUPERLINK terminal "BNC" or "D-SUB" lights up. Pressing the 4 INPUT button on the front panel or SL (= BNC), SL2 (= D-SUB) or toggle button on the remote control unit will change the SUPERLINK terminal.

## Buttons function

① to ⑤ buttons work for DA SL and the others are compatible with the other CEC products like CD Transport TL2N, CD Player CD5, D/A Converter DA5 and so on. Here refers to DA SL function only.



### ① DIMMER button

Press to change the display brightness in different 3 levels. Refer to "DIMMER" on page 11 for details.

### ② D.FILTER button

Press to select a digital filter type FLAT or PULSE. Refer to "Digital Filter" on page 11 for details.

### ③ SL button

Press to select the SUPERLINK BNC x 4 terminals.

### ④ SL2 button

Press to select the SUPERLINK D-SUB terminal.

### ⑤ toggle button

Press to change the SUPERLINK input BNC or D-SUB.

## Precaution on handling the remote control unit

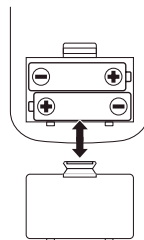
- When operating the remote control, point it towards the remote sensor on the front panel.
- Make sure nothing is blocking the front panel where

the remote sensor is located.

- Avoid exposing the remote sensor on the front panel to direct sunlight or other light sources, as such exposure can cause malfunction.
- The remote control unit may malfunction when its batteries are running low. Change the batteries to new ones of the same type if this seems to be the case.

## Battery Installation

Remove the cover of the battery compartment. Insert two AAA batteries into the compartment. Make sure that the batteries are inserted with their positive (+) and negative (-) poles positioned correctly, and put the cover back on.



## Battery Replacement Period

If the distance at which the remote control unit can be used to operate DA SL seems to be decreasing, replace both batteries with new ones.

## Precaution on handling batteries

- Never use different types of batteries together. Both rechargeable and non-rechargeable batteries can be used, but the two should not be used together.
- If you will not be using the remote control unit for an extended period of time (more than a month), remove the batteries to prevent leakage.
- If the batteries leak, use a cloth to wipe away the liquid inside the battery compartment and replace the batteries with new ones.
- Do not heat or disassemble batteries, and never dispose of old batteries by throwing them in a fire. Dispose of batteries following laws in the local area.



# "SUPERLINK" Digital Signal Transmission System

SUPERLINK is a proprietary digital signal transmission system that transports music signals and synchronization(clock) signals with separate cables.

The SPDIF(Sony Philips Digital Interface) and AES/EBU(Audio Engineering Society/European Broadcasting Union) systems, commonly used in coaxial digital outputs and optical outputs, transmit both the music and clock signals through the same cable, and thus are prone to jitter effects caused by the signals interfering with each other.

SUPERLINK system transmits these signals separately with multiple cables, requiring no encoding/decoding process for data transmission. It minimizes deterioration of the music signal during transmission by using the clock signals from the D/A converter's master clock generator to achieve complete synchronization.

Each transmission path delivers/receives the following signals.

**MCK(Master Clock):** The CD transport receives the master clock signal from the D/A converter through this line, and functions as a slave to the DA converter, enabling completely synchronized transportation of audio data.

**BCK(Bit Clock):** Sends bitclock signals, required for digital data bit identification(e.g. sampling frequency) or signal readout, from the CD transport to the D/A converter.

**LRCK(L/R Clock):** Sends left/right identification clock signals from the CD transport to the D/A converter.

**DATA:** Sends audio data from the CD transport to the DA converter.

## Remark:

Whenever changing the SUPERLINK input the master clock line or source is also changed. This master clock change will cause the CD transport to re-read the disc information (TOC) resulting in cancelling every current functional settings like programmed playback, repeat, dimmer and so on. Set those functions again after re-reading out TOC.

# Digital Filter

Press the FILTER button on the front panel or D.FILTER button on the remote control unit to select a digital filter type FLAT or PULSE.



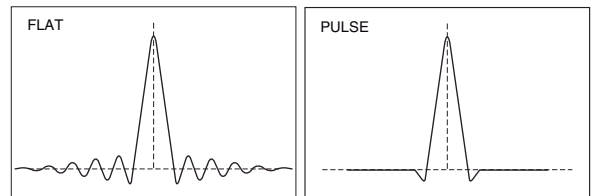
**Click noise may happen from speakers or headphones when changing the digital filter. It is recommended to change the filter at low volume level.**

**Note:** When the display is "off" by dimmer setting pressing once the FILTER button will return the display brightness to the default "brighter" and show the current digital filter type. Press the button again to change the digital filter type.

**FLAT** digital Filter is very common in digital audio items. The frequency response is almost perfect, but such filter cause "ringing" in the time domain. Some energy of a pulse signal is distributed in the time domain, before and after the pulse centre. Any ringing before the signal does not exist in nature.

**PULSE** digital filter avoids the problems in the time domain and thus has a very good response in the time domain. The frequency response of the PULSE digital filter shows a soft roll-off at high frequencies. This results in about -2dB at 20kHz with an input sampling frequency of 44.1kHz. For higher sampling frequencies the roll-off is irrelevant and the "PULSE" filter is the best choice. For 44.1kHz and 48kHz the better result may depend on the whole system as well as personal preferences.

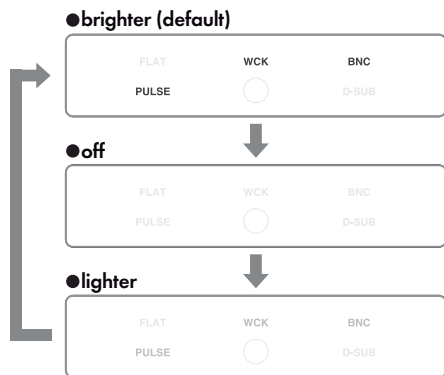
Differences in ringing of FLAT and PULSE



Wavy form of the digital signal passing through the circuit

Display brightness can be changed in different three levels.

Press the DIMMER key on the remote control unit to dim the display. The display brightness will toggle through "brighter"(default), "off" and "lighter".



## During "off" mode:

Pressing once a function button on the front panel or remote control unit relating to the input and digital filter the display will return to "brighter" and show the current setting. Press the function button successively to change the setting. 5 seconds later the display brightness will return to "off" automatically.

- Regardless of any DIMMER setting the brightness will return to the default whenever the power is turned on again.

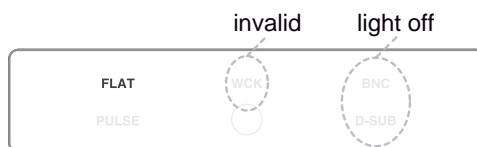
## to listen to SUPERLINK

- ❶ Power on DA SL. All lights blink and 5 seconds later the current settings are displayed.
- ❷ Press the INPUT button on the front panel, or SL, SL2 or toggle button on the remote control unit to select BNC or D-SUB connected with a CD transport / player.
  - Whenever changing the SUPERLINK input the master clock line or source is also changed. The CD transport / player ready to playback will re-read the disc information (TOC) by changing the input.
- ❸ Power on the CD transport / player connected with the selected input.
- ❹ Power on the amplifier lowered the volume.
- ❺ Set a CD on the CD transport / player and start the playback.

## to try SPDIF (COAXIAL) input

BNC-BCK terminal can be also used for SPDIF (coaxial) input.

- ❶ Press and hold the input button on the front panel or the toggle button on the remote control unit for approx. 3 seconds.
  - Right after pressing the input or toggle button the current input will change to another with a click sound, and then approx. 3 seconds later any input indicator will be turned off with a click sound. Now the BNC-BCK terminal is in SPDIF (COAXIAL) input mode.



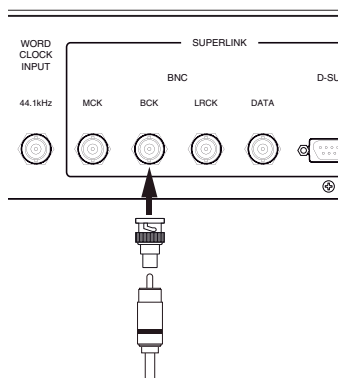
- 44.1kHz word clock input is invalid in the SPDIF (COAXIAL) input mode.
- Whenever changing the SUPERLINK to SPDIF mode and vice versa, the master clock source is also changed. The CD transport / player ready to playback will re-read the disc information (TOC) by changing the mode.

## Basic Operation - continued -

② Connect a 75 ohm COAXIAL cable between the BNC-BCK terminal of DA SL and the COAXIAL output of the CD transport / player.

❑ Remove the BNC cable at BNC-BCK terminal for SUPERLINK if there, then connect a COAXIAL cable for SPDIF.

❑ In case of connecting a RCA cable, use the BNC-RCA converter plug delivered as accessory in the box.



❑ Any other terminals than BCK-BNC can keep the SUPERLINK connections in the SPDIF mode.

③ Power on the amplifier lowered the volume.

④ Set a CD on the CD transport / player and start the playback.

## Maintenance

① If the surface of the DA SL case becomes soiled, wipe with a soft cloth or use diluted neutral cleaning liquid. Be sure to remove any fluid completely. Do not use thinner, benzene, alcohol, chemical cloths or bleaching agents as these may damage the surface of the CD5 case. Also avoid using aerosol insecticides near this appliance.

② DA SL requires no periodic maintenance, and contains no user-serviceable parts. Contact your dealer or an authorized CEC service center for an inspection and repair in case of malfunction.

## Troubleshooting

If you suspect a malfunction in this appliance, please check the following chart before calling your dealer.

Malfunction	Solution
No power	Connect completely both ends of the AC power cord
No sound	Correct the connection with CD transport / player and amplifier
	Select the input connecting with CD transport / player
	Start the playback
	Increase the amplifier volume
	Power on again all the system
Hum noise	Connect the RCA plugs completely
Sound skipping	Place the player on stable board
	Clean up the disc
Interference on tuner	Install DA SL away or turn off the tuner
Unresponsive to remote control	Turn on DA SL
	Install batteries in the RC unit
	Replace with new batteries

DA SL contains a microcomputer that can malfunction due to the external noise or interference. If this seems to be the case, turn the unit off and wait for a short while before turning it back on and trying again.

## Service Contact Preparation

In case you need to contact a service center please prepare the following information.

Model name and serial number:

Purchase date:

Dealer name and contact information:

Description of the unit's problem:



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CEC Holdings Co., Ltd., Japan

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