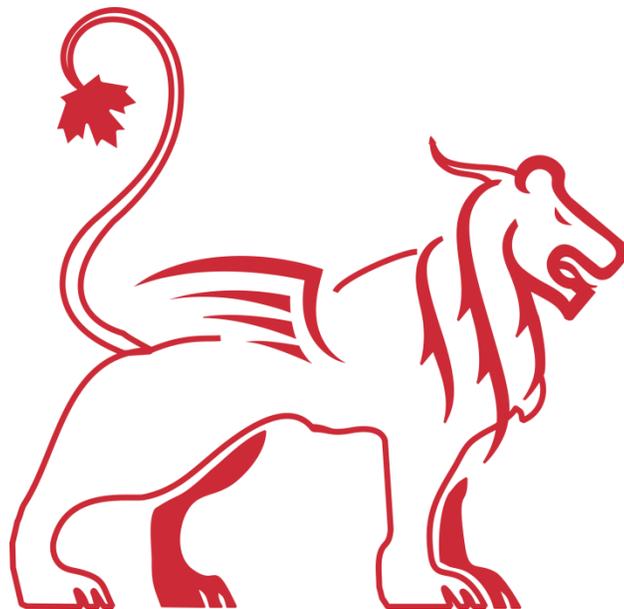


REAL EMOTION
C E M B A L O
LAB DESIGNS

Spring Series
S5008DA



Operating Manual

Digital Analog Converter

S5008DA

NOTES:

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Important safety instructions



Presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



Read and follow the safety and operating instructions contained in the instruction manual.



Never open the product as there is a risk of electric shock.

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.

15. Do not listen at high volume levels for long periods of time to prevent hearing damage.

16. To completely disconnect this apparatus from the AC mains, disconnect the power supply cord plug from the AC receptacle.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment. The mains plug of the power supply cord shall remain readily accessible. Keep the product, accessories and packaging parts out of reach of children and pets to prevent accidents and choking hazards.

Design Philosophy

We often ask, what really is the best playback device? According to cembalo, the emotion at the heart of a musical performance is where the real charm and beauty is found, and it has also been approved at the highest standard among playback devices. Cembalo, in its music playback pursuits, wants to retain the true nature of the composition while transmitting the raw emotional intensity and passion of the music.

It's just like being at a performance of Mozart's <Serenade in G major>: with the resounding, bright and lively melody of the major chords, our hearts become stirred and we are even unable to resist singing and dancing along with the music.

But if it suddenly changes to Chopin's <Nocturne in b Flat Minor>, with the gentle, restrained, even melancholic and plaintive ambiance created by the minor chords, we can feel the grief and desolation of the composer.

But, in fact, a lot of expensive equipment manufacturers are unable to fully grasp this concept. Some emphasize the resolution and the sound stage, but with the sound itself lacking emotion and feeling; several sound warm and sweet but lack vitality, producing a singular emotion which lacks authenticity. In Cembalo way, audio reproduction is the art of music playback, expressing the emotion of the music and conveying the passion of the composition. Many compare the playback with the live sound.

We have only one goal: ***Real Emotion.***

Cembalo pursues excellence, with no cost constraint, and without rigidly adhering to the measure index.

Listen - we seek the real nature of the music and the expression of its true feeling – guided by the auditory sense and impressions of those artists with whom we cooperate - and thus deeply involve ourselves in the choice of the basic structure of the circuit; a choice which is not limited by traditional structures.

Design – A precise mathematical model is constructed for the whole system, and is repeatedly optimized, so the whole circuit system is at the theoretical optimum point. The product's entire design and technology has the sole objective of making music vivid, lifelike, rich and vibrant.

Listen again and fine tune –With repeated listening, we fine tune, in order to express the

truly rich emotion of the music and the unprecedented real-life quality

This process is just like the manufacture of jewels handed down for generations: first of all, an area containing minerals must be found in the boundless land; the gemstone of the best quality will then be selected among those extracted; then finally, through the craftsman's exquisite carving, a precious jewel emerges which lasts through the ages.

Cembalo, listen, hear the difference.

General Information

Introduction

From all of us at Cembalo Audio Laboratories, thank you for your choosing the Cembalo D/A converter.

A great deal of effort went into the design and construction of this “emotional” device. By means of the "Listen, Design, Listen again" design process and our special technology (e. g. "*Zero External Jitter*", "*64bit Superior Precision Digital Filters*" and "*Signal-Express*"), you will never have experienced such real and stirring sounds through your system before.

Furthermore, S5008DA has a discrete Class A headphone amplifier which can be matched with nearly any high-end headphones, and fully exploit the limit of them.

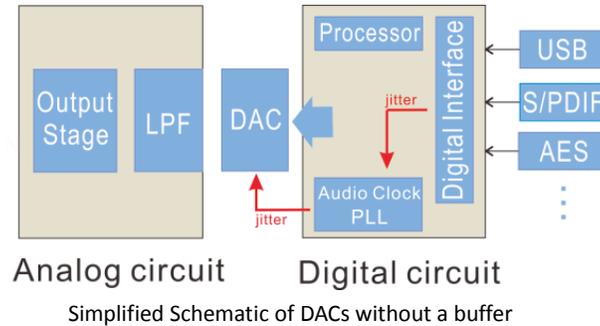
Used properly, it will give you many years of enjoyment.

Key Special Features

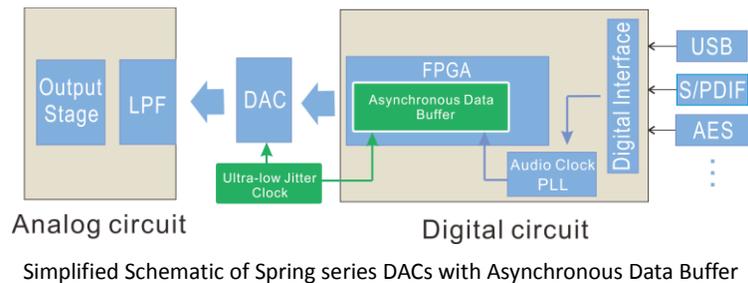
- Reference level DAC- up to 384Khz 32bits PCM or DSD, DoP64, DoP128
- Real balanced 32-bit precision D/A circuit
- Latest 55nm MAX10 FPGAs as a process core for DSD and PCM, the lowest distortion
- Zero External Jitter
- 64 bit Superior Precision Digital Filters
- Temperature-compensated, femtosecond level ultra-low jitters crystal oscillators
- Amplifier level power system-Power capacity >30000uf
- Class A balanced analog circuit
- Aluminum CNC chassis, isolate EMI interference
- True Class A, high power, discrete headphone amplifier without negative feedback
- AISO HIFI USB Driver, support to native DSD
- 99.99998% (Ohno Continuous Cast) copper internal signal wires
- High purity 6 layers PCB board for instruments/audio devices
- Designed and built in Canada

Special Technology

Zero External Jitter



In fact any PLL (phase locked loop) cannot be ideal. The noise of power supply or grounding, changing of temperature, the jitter of input clock will have negative impacts on the performance of PLL. That's why most DACs are highly dependent on the quality of the digital signal they are fed.



However, the S5008DA delivers outstanding performance with even less-than-ideal digital signals.

It uses the “**Asynchronous Data Buffer**” in which the digital information is stored temporarily on its way to being converted to analog. Just as a large water tower can provide a steady source of water to a small town, despite hour-to-hour variations in the supply of water from the well, an “Asynchronous Data Buffer” can provide a steady, consistent source of digital data to the converters which are responsible for changing that data into music. Even if there is significant “*jitter*” (inconsistencies in timing) in the incoming digital information, **the output of the “Asynchronous Data Buffer” is controlled by a special clock which tremendous accuracy**. The result largely eliminates the jitter and allows the musical information to be reproduced cleanly, without jitter-induced distortions.

64 bits Superior Precision Digital Filters

S5008DA closes the 32-bit filter inside DAC chips and uses “64-bit Superior Precision Digital Filter” on FPGA to realize over sampling, compensation and optimizing. The THD (Total Harmonic Distortion) can reduce to about 1/10.

Signal-Express

Signal propagation process is not perfect in fact. Signal path often contains impurities and is insufficiently smooth, meanwhile the impedance is not matched. The impurities and rough surface seriously impede the transmission of these weak signals; the signals will be reflected at all the impedance mismatch points.

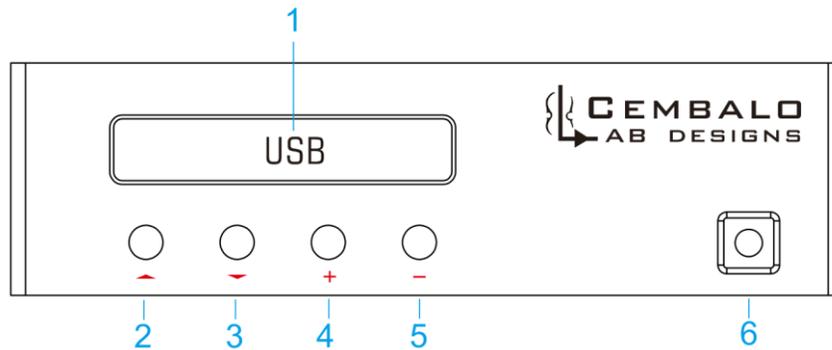
In order to reduce signal propagation distortion, Signal-Express is invented:

- Ultra-short signal path with minimal internal wiring
- Construct a perfect impedance match network
- High purity OCC (99.99998%) copper as signal wires

Signal-Express technology reduces propagation loss to a minimum, making us hear richer details.

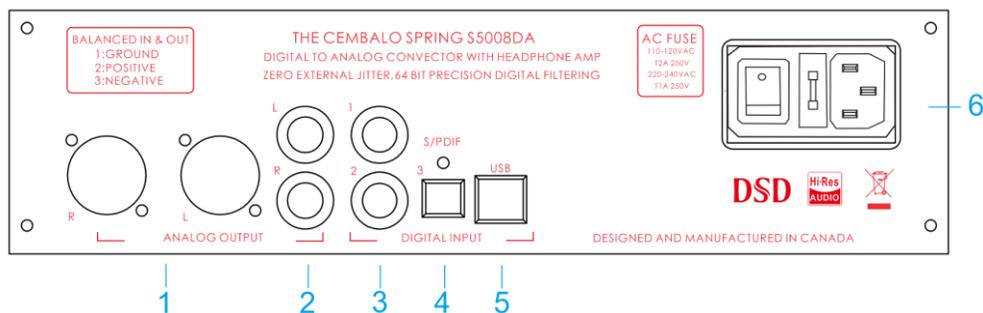
Product overview

Overview of the front panel



1. Input channel selection, CH1-CH3 or USB
2. Channel selection button
3. Channel selection button
4. Volume Up
5. Volume down
6. Headphone outputs, $\frac{1}{4}$ " (6.35 mm) jack socket

Overview of the rear panel



1. Balanced Analog Outputs
2. Single-Ended Analog Output
3. RCA S/PDIF Electrical Digital Input CH1-CH2
4. EIAJ Optical (Toslink) Digital Input CH3
5. USB Digital Input
6. AC Power Connector

Using the Spring series DAC

Installation & Setup

Ensure sufficient ventilation. The headphone amplifier generates heat which is dissipated through the housing. The **S5008DA** should not be installed near other heat sources or in tight enclosed areas.

Place the **S5008DA** DAC on a flat, horizontal and solid surface

Connecting the DAC to the mains

Check your DAC complies with your local A/C voltage and frequency requirements. If you use an unsuitable power supply, this can cause damage to the product.

Spring series DACs are set at the factory (internally) for 100v, 120v, 220v, 230v or 240v AC mains operation @ 50 or 60HZ. This voltage setting cannot be changed by the user.

The **S5008DA** uses 3 fast acting fuses totally, one located in a fuse drawer on rear panel, two fuses inside on PCB. Turn off the unit and remove the power cord before attempting to remove and replace the fuse. Replace fuse with the same type and value.

For PCB fuse: F 1A/250V

For rear panel fuse: F 6A/250V

Connecting the DAC to digital inputs

You can connect different S/PDIF inputs from CH1~CH3. Also, the USB can be connected to PC/Mac through your preferred dedicated USB Audio cable. NO Drivers needed for Mac OS.

All sample rates are detected and played automatically, include different DSD streams.

Accepted USB formats and sample rates:

PCM (Pulse Code Modulated): 44.1Khz, 48Khz, 88.2Khz, 96Khz 176.4Khz, 192Khz,

DSD (Direct-Stream Digital): 352.8Khz or 384Khz
DSD64 and DSD128

Please see separate PC/Mac player information and guide on:
<http://www.cembalolab.com/index.php/Index/supportm.php>

Cembalo Streaming/ ASIO drivers for Win 32-64bit can be downloaded at:
<http://www.cembalolab.com/index.php/Index/supportm.php>

TIPS: Through channels can be changed easily by buttons on the front panel, we **suggest** you connect less digital inputs at the same time, only one type is perfect for the lowest digital noises.

Burn-In and Warm-Up the DAC

Your Spring series DAC has been thoroughly tested and burned in before shipping. Performance will continue to improve during the first 40–50 hours of normal use. After this period optimum performance will be reached approximately 20 minutes after turn-on.

Ground Connection

Earth ground is used to minimum digital noises. Internally the earth ground from AC power cord is connected to the digital circuit by default.

For the best performance, we recommend a good direct physical connection to the Earth.

Care and Maintenance

Please disconnect the product from the AC power before cleaning. Never pour even small amounts of any liquid directly on the DAC, as doing so may allow the liquid to reach the circuitry inside the unit. Any liquid inside the unit poses a hazard to both the user and to the unit and must be avoided. We suggest you only use a dry and soft cloth to clean the DAC.

Specifications

Converters	32-bit DACs
Formats	
PCM via input CH1 to CH3	Up to 192khz
PCM via USB input	Up to 384khz
DSD via USB input	DSD64,DSD128
Analog Output level balanced, max	4.3Vrms / 6.08Vpp
Output level single ended, max	2.15Vrms / 3.04Vpp
S/N Ratio, 20-20000hz	-118dB
Distortion (THD+N)	<0.0003% @ 0dB
Channel Separation	> 115dB
Input Impedance, single ended (SPDIF)	75ohm
Analog output Impedance (20-20000Hz)	20ohm
Bandwidth (-3dB), max.	0 - 250kHz
Power consumption (Maximum)	50W
Power Supply Capacity	30000uf
Headphone output	300 ohms 2W
Dimensions	
Size (W x H x D), netto	
CM	27x10x22
Inch	10.6x4x8.6
Weight, netto	2.7kg/6 lbs.
Shipping weight	4.7kg/10 lbs.

*Specifications can to be changed by Cembalo Audio Designs without further notice.

Warranty and Registration card

Cembalo Lab Spring series products are warranted to be free from manufacturing defects under normal use for two years from the date of purchase. During the warranty period, any Cembalo component exhibiting defects in materials and/or workmanship will be repaired or replaced, at our option, without charge for either parts or labor, at our factory. The warranty will not apply to any Cembalo component that has been misused, abused or altered.

End users are supported in the guarantee through their distributor. In such case, please contact your dealer for full guarantee condition and service.

Please register your products to obtain direct Cembalo products. Please fill out the registration card and send it directly to Cembalo. Or email all information shown in registration card to us, info@cembalo.com, and PDF form can be downloaded at support

 of our website, www.cembalolab.com.

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First Name: Given Name:

Email: Date of Purchase:

Address: Post Code:

Product Model: Serial Number:

Dealer: City and Country:

Where did you get to know Cembalo product?

Dealer Acquaintance Online Magazine

What can be improved on Cembalo or Cembalo Products in the future?

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