



Model S MkIII

S/PDIF & PCM direct / I2S D/A Converter

User Manual

Rev.00, July 2015

Audial d.o.o. Belgrade, Serbia
www.audialonline.com, info@audialonline.com

IMPORTANT PRECAUTIONS

1. Do not expose this device to rain or moisture, excessive heat or mechanical force.
2. Use this device exclusively with specified mains voltages.
3. Unplug the device from the wall outlet during a lighting storm.

To prevent the risk of electric shock, do not remove the cover!
This device contains no user serviceable parts inside.
Refer servicing to qualified servicing personnel only.



**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 product.

Thanks for choosing the Model S MkIII. We hope its sound quality will satisfy you for years to come.

This User Manual comprises introducing information on use and performance of this device. For more data please refer to the Audial site, www.audialonline.com/model-s/, or send your questions to info@audialonline.com.

Getting started

Other than the D/A converter itself, a packing box should comprise:

1. Mains cable
2. RCA female to BNC male adapter
3. Printed copy of this manual
4. Invoice (if sold directly by Audial).

Mains cable supplied is industry standard one. It is however generally recommended to use high quality, preferably solid core cables, everywhere in the audio system, and this suggestion applies to the mains cable too.

RCA to BNC adapter is supplied to help experimenting with different S/PDIF cables since these usually come fitted with RCA connectors. This adapter is however not a long term solution, because the S/PDIF transmission line is supposedly 75 Ohm line, and hence it is highly recommend to use real 75 Ohm BNC plugs. Regardless of what you may be told from time to time, the RCA connector can not meet this requirement.

Inputs

As opposed to previous version of Model S, which had two S/PDIF inputs, the Model S MkIII has one S/PDIF input (one BNC connector), and PCM direct input (four BNC connectors).

S/PDIF input can be used either for connection with dedicated CD transport, or appropriate digital output found on the integrated CD players, or any other device comprising adequate S/PDIF output (PC soundcards, different music servers etc.).

PCM direct input bypasses the S/PDIF input stage, and carries the signal directly to the D/A converter chip (TDA1541A). Model S MkIII can accept conventional I2S serial protocol, which requires three connections (LRCK/BCK/Data), or Philips' specific

simultaneous data protocol, which requires four connections (LE/BCK/DataL/DataR). The mode of operation at this input is set by the switch at back plate (I2S/SIM). This switch has no effect when device operates with S/PDIF input.

At this input, Model S MkIII can accept either 3.3V or 5V signal.

Normally, BNC connectors at this input are also 75 Ohm, with adequate 75 Ohm input termination. On demand, for use with sources not able to drive such a load, the termination can be omitted. Also, this input can be made to match 50 Ohm requirements.

Outputs

The Model S has two sets of the outputs, and they can be either unbalanced RCA or balanced XLR.

Normally, Model S MkIII has one RCA and one XLR pair of outputs, both conveying the same, transformer coupled signal. Please note that in this case a simultaneous use of both outputs is limited, because the ground of the device connected to the RCA output will ground the negative pole of the XLR output.

As opposed to XLR outputs, which are always transformer coupled, an RCA outputs can be also capacitors coupled. On customer's request, RCA outputs can be also directly coupled, however this requires special care when connecting such a device into the system. For further information in this regard, it is best to contact Audial directly.

The Model S comprises external connector to its chassis/earth ground. This connector can help proper system grounding and/or earthing, or it can be used to connect the shield of the interconnect cable (similarly to XLR pin 1).

S/PDIF ground

S/PDIF GND switch located at the back plate controls the way the ground of the S/PDIF line/cable is connected to the DAC ground.

The S/PDIF input of the Model S is transformer coupled, and since the shield of S/PDIF line is usually grounded (either directly or capacitively) at the source, thus keeping the cable shield at stable voltage and protecting it from receiving (or emitting) RFI, it may be not only redundant but also unwanted to couple the S/PDIF ground also at DAC side. Consequently, in many cases it is best to break the path between the ground of the S/PDIF and the ground of the DAC completely ("GROUND: LIFTED").

However, for a couple of reasons, certain coupling between these grounds in some systems may be advantageous, so the switch connecting the ground of S/PDIF line and the ground of the DAC is provided. This connection is achieved by 100nF capacitor ("GROUND: COUPLED"). Since the best option depends on the system actually used ("the system" includes but is not limited to the S/PDIF source, the way the safety earth issues are handled, as well as a home electric installation), it is recommended to check which position works the best in your system.

Direct coupling of S/PDIF ground is not provided because it usually brings inferior results.

LED indicators

Two green LEDs indicate selected input. Third diode lights when S/PDIF stage locks to the source. Fourth diode shows if simultaneous data protocol is selected for PCM direct input, and TDA1541A is in simultaneous data mode.

Everyday use

The Model S is easy to use device. It achieves claimed technical performance (distortion, frequency response etc.) right from the start, however it needs a couple of weeks of burning in to perform its best in subjective sonic terms.

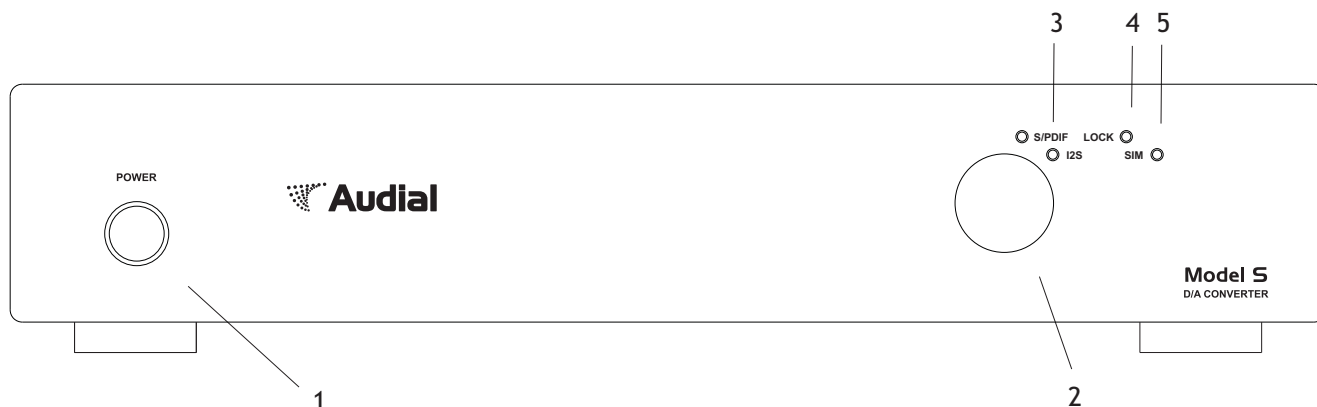
The D/A converter chip used in this device (TDA1541A) employs a classic TTL architecture, and hence it dissipates somewhat more power than is usual for devices of this kind. Hence leaving this device constantly turned on is not recommended. It is not really needed either, because once it passes the initial burning in it is generally enough to leave it powered on for about half an hour before critical listening.

Warranty

Audial claims proper working of this product for two years. Audial is obliged to correct any malfunction within this period, at no charge, either by competent repair service, or by swapping the sold unit by the new one.

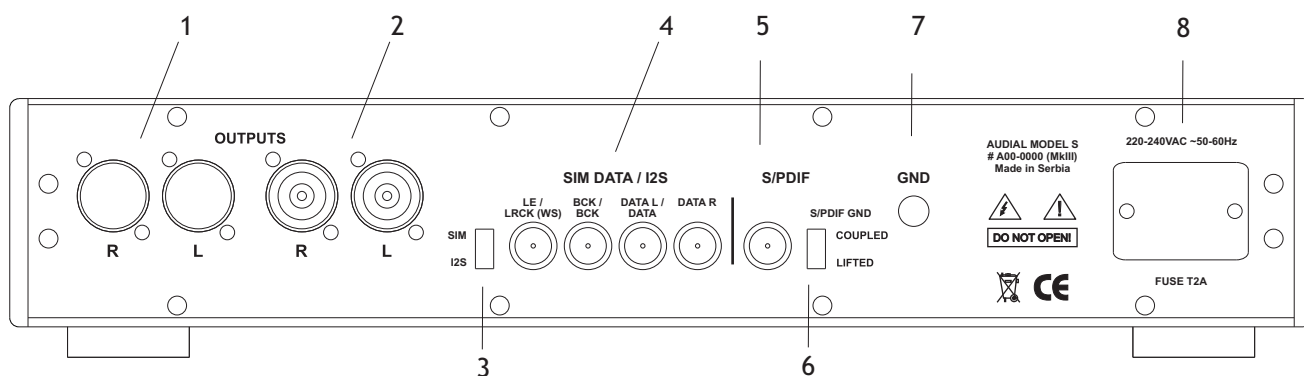
For the units sold directly by Audial, invoice is also guarantee certificate. Since Audial maintains own data base of directly sold units, the original buyers in most cases won't need it. Warranty is still fully transferrable from original to subsequent owner(s), however in this case we will probably ask for the invoice.

Front Panel



- 1 - Power switch
- 2 - Input selector
- 3 - Input indicators
- 4 - S/PDIF lock indicator
- 5 - Simultaneous data mode indicator

Rear Panel



- 1 - Balanced output connectors (XLR)
- 2 - Unbalanced output connectors (RCA)
- 3 - I2S / simultaneous data mode switch
- 4 - PCM direct input connectors (BNC)
- 5 - S/PDIF input connector (BNC)
- 6 - S/PDIF ground switch
- 7 - Chassis (earth) ground connector
- 8 - Mains connector (IEC C14) with fuse

Specifications

INPUTS:

S/PDIF: 75 Ohm BNC connector

PCM direct: I2S or Philips simultaneous data protocol

SAMPLING FREQUENCY:

S/PDIF: up to 96kHz

PCM direct: up to 96 kHz (I2S mode with 64 bit frame),

or up to 192 kHz (I2S mode with 32 bit frame, or simultaneous data mode)

OUTPUTS:

Unbalanced RCA and balanced XLR, 2.1V RMS both

OUTPUT IMPEDANCE:

Transformer coupled: ≤ 90 Ohm

Directly coupled: ≤ 4 Ohm

FREQUENCY RESPONSE:

Sin(x)/x equivalent:

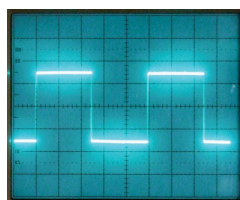
@ fS=44.1kHz: -3.2dB @ 20kHz

@ fS=88.2kHz: -0.8dB @ 20kHz

@ fS=192kHz: -0.2dB @ 20kHz

TRANSIENT RESPONSE:

Clean with no overshoot or ringing



1kHz square wave

ABSOLUTE PHASE:

Correct

HARMONIC DISTORTION (@ 1kHz)*:

0.003% @ -6dBFS (I/V dominated)

0.01% @ -20dBFS (D/A dominated)

0.8% @ -60dBFS (D/A dominated)

INTERMODULATION DISTORTION (CCIR)*:

0.01%

MAINS VOLTAGE:

220-240VAC/50-60Hz

110-120VAC/50-60Hz is also available

OUTER DIMENSIONS (W x D x H):

431.5 x 320 x 102 mm

WEIGHT:

Approx. 9 Kg

* - each sample of the Model S is supplied with its own lab report

