

About this manual:

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It is the policy of ST Audio to improve products as new technology and newer components become available. ST Audio, therefore reserves the right to change specifications without prior notice.

A/S Center

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Caution: To reduce the risk of electrical shock, do not remove the cover or rear panel of this unit. No user serviceable parts inside. Please refer servicing to qualified personnel only.

Warning: To reduce the risk of fire or electrical shock do not expose this appliance to rain or moisture.

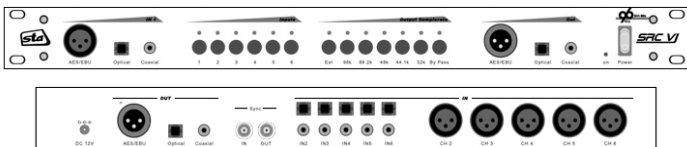
Service: The user should not attempt to service the appliance beyond that is described in the Operating Instructions. All other servicing should be referred to qualified service personnel.

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I. Features

Thank you very much for expressing your confidence in ST Audio products by purchasing the SRC VI unit. With much experience in the audio industry over a long period of time and along with valuable suggestions from our customers, our engineers have developed a product we know you will be satisfied with. We guarantee you uncompromising quality as well as excellent technical and audio properties at an extremely affordable price.



The SRC VI is a universal tool for modern home/pro studio environments when several digital devices are used together. The main functions include:

- high quality realtime sample rate converter (120dB modulation)
input samplersates: 8~96kHz
output samplersates: 32kHz, 44.1kHz, 48kHz, 88.2kHz, 96kHz, WordClock
sample rate converter bypass possible (allows 1:1 transfers)
max. resolution: 24bit (20 and 16bit also supported)
- digital patchbay/switchbox for AES/EBU and S/PDIF signal streams
6 separate inputs (AES/EBU, optical S/PDIF, coaxial S/PDIF each)
2 front/rear outputs (AES/EBU, optical S/PDIF, coaxial S/PDIF each)
- digital signal distribution
separate outputs (2x optical S/PDIF, 2x coaxial S/PDIF, 2x AES/EBU) to
send out the same signal simultaneously
- master clock generator (WordClock out)
the selected sample rate is sent out via WordClock
- S/PDIF (optical, coaxial) & AES/EBU signal converter
optical S/PDIF <-> coaxial S/PDIF
optical S/PDIF <-> AES/EBU
coaxial S/PDIF <-> AES/EBU
- signal repeater
extending the maximum cable lengths for digital connection

II. Installation

Your ST Audio SRC VI was carefully packed to protect the unit from rough handling. Nevertheless, we recommend that you carefully examine the packaging and its contents for any signs of physical damage, which may have occurred in transit.

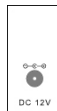
If the unit is damaged, notify your dealer and the shipping company immediately, otherwise claims for damage or replacement may not be granted. Shipping claims must be made by the consignee.

Rack Mounting

The unit fits into one standard 19" rack unit of space (1 3/4"). Be sure that there is enough air space around the unit for cooling to avoid overheating. Please do not place the SRC VI on high temperature devices such as power amplifiers.

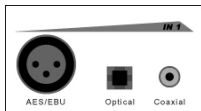
Power Supply

The SRC VI comes with an external power supply that is used to supply the 12V DC operating voltage. Please connect the power adaptor to the 12V DC input on the left side of the back panel. Please do not use a different power adaptor.



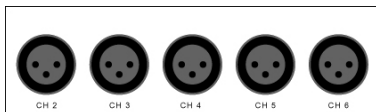
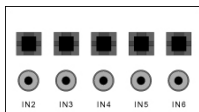
Audio Connections

Up to six devices can be connected to the digital inputs of the SRC VI at the same time. Each of these devices can be connected either via optical S/PDIF (TOSlink), coaxial S/PDIF (RCA) or AES/EBU (XLR). Each of the six input channels provide one of these input connectors.



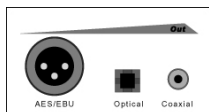
To have quick access to one of the available input channels, the first set of inputs is on the front panel (XLR for AES/EBU, TOSlink for optical S/PDIF and RCA for coaxial S/PDIF).

The other input connectors are placed on the back panel of the SRC VI. One group contains S/PDIF inputs 2 to 6 (TOSlink for optical and RCA for coaxial connection), the other group contains the AES/EBU input channels no. 2 to 6 (XLR).

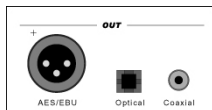


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There are two separate sets of output connectors. One set is placed on the front panel for quick access. The other outputs are placed on the backside of the unit and send out the same signal. The AES/EBU output is available as XLR connector, the S/PDIF outputs are available via optical TOSlink and coaxial RCA connectors. All outputs are available simultaneously.



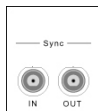
front



back

WordClock Connection

The SRC VI also provides connection possibilities to sync the unit to other professional audio devices via a WordClock connection. This is done with BNC connectors which are placed on the back panel of the unit. Devices that are connected to the Sync OUT connector of the SRC VI will work with the sample rate that is currently selected. To force the SRC VI to work with the sample rate of another device, you need to connect it to the Sync IN connector and select this function on the front panel.

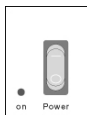


III. Controls

The controls of the unit are placed on the front panel for easy access.

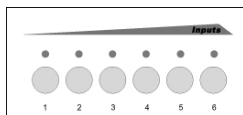
Power

To switch on the unit, you use the power switch which is placed on the right side of the front panel. The current power status is displayed by a LED left of the switch.



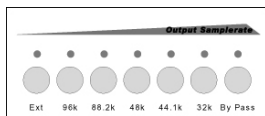
Input Selection

The SRC VI provides six input channels. Each of the signals that are connected to these inputs can be routed to the output. In order to select which input is used, you can press one of the channel buttons (1 to 6) on the front panel. The currently selected channel is displayed by a LED over the corresponding button.



Samplerate Selection

The SRC VI provides the possibility to change the sample rate of the output signal. This is done by a high quality sample rate converter with 120dB modulation to provide excellent conversion and output quality. In this case, the input sample rate does not matter – it will be automatically converted to the selected output rate.



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There are seven buttons to select the output sample rate:

- Ext** This selects the sample rate applied to the Word Clock input connector. Make sure to connect a device to the Sync IN connector on the back when using this output rate selection.
- 96k** Selects 96kHz as output sample rate.
- 88.2k** Selects 88.2kHz as output sample rate.
- 48k** Selects 48kHz as output sample rate.
- 44.1k** Selects 44.1kHz as output sample rate.
- 32k** Selects 32kHz as output sample rate.
- By Pass** This disables the sample rate conversion function of the unit. The input signal will be routed to the output 1:1 without any change of the sample rate.

The LEDs over the buttons display the current selection.

IV. Application

Switchbox / Patchbay

The SRC VI works as a switchbox that allows you to select from up to six different S/PDIF or AES/EBU sources. Most devices like DAT recorders, MD recorders, digital amplifiers or digital audiocards only have one digital input available. If you are using several devices with digital outputs you can use SRC VI to connect all devices and then select the one you need currently on request. You don't have connect / disconnect the different cables from your sources all the time.

To do that, connect your devices (up to six) to the digital inputs. Connect your destination device to one of the digital outputs. Now you can select the input one the front panel of the SRC VI with the channel selection buttons.

Format Conversion

Many digital devices just support one format (optical / coaxial S/PDIF or AES/EBU). If you want to connect it to another device that just supports a different format, you can use SRC VI to convert the signal on-the-fly without any loss or change in quality.

Just connect your source to one of the inputs and select it with the channel button on the front of the SRC VI. This signal will be converted automatically to optical S/PDIF, coaxial S/PDIF and AES/EBU – no matter what format it used originally.

Signal Distribution

Sometimes you want to connect different devices to one available digital source at the same time. The SRC VI 'copies' the signal without any loss to all the available output channels.

Connect your source to one of the available inputs and select it with the channel selection button on the front. Now the output signal will sent to the two optical S/PDIF outputs, the two coaxial S/PDIF outputs and the two AES/EBU outputs. All six output connectors send out the same signal simultaneously. This would allow you for example, to connect a professional DAT recorder to the AES/EBU output at the same time while you listen to the signal via a digital amplifier that is connected to one of the optical TOSlink outputs.

Sample Rate Conversion

Sample rate conversion is one of the important possible applications for the SRC VI. This explains the name of the unit of course. Many devices do not allow you to select the output sample rate (e.g. some consumer DAT recorders, MD recorders or many soundcards). To process these signals digitally in your studio, it might be needed to change the sample rate however (for example if you have a 48kHz signal that should be recorded to a CD that works with 44.1kHz of course).

The SRC VI allows you to change the output sample rate with the switches on the front panel. The input sample rate does not matter in this case. To allow 1:1 transfers (without changing the signal at all), you can also select **By Pass** on the front panel.

In a studio with WordClock connection for synchronisation, the SRC VI can even be used to force the sample rate of devices without WordClock connection possibility to the common clock you use in your studio. To do that, select **Ext** as output sample rate on the front of the unit.

Master Clock Generator

If you have a studio setup that uses many digital devices, it is important that all of them work with the exactly same sample rate to avoid synchronisation problems such as drop outs, noise or clicks in your audio stream. One device needs to supply the Master Clock for all other devices. SRC VI sends out the selected sample rate (switches on the front) out through the WordClock connector (always) as well as through the AES/EBU and S/PDIF outputs (with an active input signal).

Signal Repeater

The SRC VI can also be used to double the possible length for digital connections. Just connect the first cable to one of the inputs of the unit and the second cable to one of the outputs. Select **By Pass** on the front and make sure the correct input channel is activated. SRC VI will now work as a signal repeater for the signal without any loss in quality.

V. Digital Sample Rate Conversion concept

Converting the sample rate of a digital signal is not a simple task. In fact, in most cases the conversion of sample rates result in increased noise level, distortion or unwanted audible artefacts (especially in the higher frequencies). The most common situation is probably to convert 48kHz signals (e.g. from a DAT recorder) to 44.1kHz (to create an audio CD). Just divide 48000 through 44100 and you will see that it is impossible to do a simple conversion because the factor is (just the first digits here) 1.08843537. A perfect interpolation to create an exact reproduction of the original signal would be too much for modern digital computer technology as the amount of data that needs to be processed to create the result would easily exceed several hundred gigabytes!

The sample rate converter processor that is used in the SRC VI overcomes these problems and works with extremely high precision. Detecting the influence on the signal caused by SRC VI can only be done with extremely expensive measuring instruments as the effects are not noticeable in the normal audible frequency and volume levels. The SRC VI works with a 120dB modulation sample rate conversion processor. The resulting quality will be better compared to any pure software based conversion algorithm as well as a combined DAC and ADC (which is still the conventional way in many pro studios to change the sample rate of a digital signal).

VI. AES/EBU and S/PDIF standards

There are two important standards for digital audio transmission. The AES/EBU (Audio Engineering Society / European Broadcast Union) standard defines a professional balanced connection with XLR connectors. The semiprofessional S/PDIF (Sony / Philips Digital InterFace) standard that is defined in IEC958 makes use of coaxial (sometimes also called electrical) connections using RCA connectors or optical connections with light conductors (TOSlink, invented by Toshiba). Both formats support up to 24bit resolution at (usually max.) 96kHz. The most common S/PDIF and AES/EBU formats are 16bit/44.1kHz (e.g. used by CD audio or MD) and 16bit/48kHz (e.g. used as default format for DAT or DVD).

AES/EBU is using 110Ohm impedance (0.2~5V pp) cables which are balanced (3-wire). In contrast to that, S/PDIF works with 75Ohm impedance (0.2~0.5V pp) unbalanced coaxial cables or optical connections. Both standards are used to transfer digital stereo PCM streams by default using one single cable.

AES/EBU can be found usually on professional audio devices such as high end effect processors, digital mixing desks or professional DAT recorders. S/PDIF is used by many consumer devices such as MD recorders, some CD-players or even soundcards.

VII. Specifications

- 6 optical S/PDIF inputs (TOSlink)
- 6 coaxial S/PDIF inputs (RCA)
- 6 AES/EBU inputs (XLR)
- 2 optical S/PDIF outputs (TOSlink)
- 2 coaxial S/PDIF outputs (RCA)
- 2 AES/EBU outputs (XLR)
- 12V DC power supply connector
- WordClock input/output (BNC)
- 6 push buttons with LED display for input selection
- 7 push buttons with LED display for output sample rate selection
- Power switch with LED display
- high quality sample rate converter processor:
Crystal CS8420, 120dB modulation
- input sample rates: 8.0kHz ~ 96.0kHz
- output sample rates: By Pass (1:1), 32.0kHz, 44.1kHz, 48.0kHz, 88.2kHz,
96.0kHz, WordClock in (8.0kHz ~ 96.0kHz)
- max. resolution: 24bit (output resolution always equals the input resolution)