Advanced All-In-One Network Streamer **RS520**

Beyond Audio, HiFi ROSE

rose

Advanced All-In-One Network Streamer RS520

Combination of Convenience and Top-Notch Sound Quality: The Birth of a New All-in-One Network Streamer

RS520 is an all-in-one product with built-in network player, DAC, and amplifier.

For DAC and amplifier module, it is equipped with ES9038PRO DAC, the flagship DAC chip of ESS technology and Class AD amplifier module developed by applying new material GaN FET are mounted.

RS520 is an advanced all-in-one network streamer that consolidates the main functions of existing all-in-one streamers into one based on ROSE's unique design know-how and functions accumulated over many years.
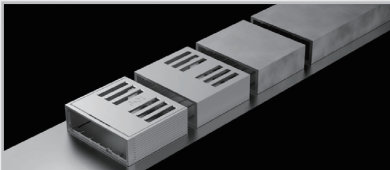
MQA | MQS Mastering Quality Sound | DSD Direct Stream Digital | DXD Digital eXtreme Definition | flac | AIFF | SABRE32 Reference DAC

Design

Unchangeable Value

The design of the RS520 focused on values that did not change over time.

A refined design that will not change over time and a bold ventilation hole for heat dissipation represent a gentleman with both functionality and enterprising appearance.

Integral Aluminium Housing

The housing of RS520, which is made with generous use of high-durability 6000 class aluminum material, is manufactured by an all-in-one process in which four sides are produced as one part.

The all-in-one manufacturing process is the most ideal method to fundamentally block vibrations that may occur between separated parts, significantly reducing noise waves that can affect sound quality.

12.6-Inch Wide LCD Touchscreen

Visible audio is emphasized using Hi-Fi ROSE's spacious, wide-viewing-angle multi-touch LCD screen. With a size of 309*82.9 (㎜) and a 1920*515 resolution LCD panel, you can enjoy a smooth and clear screen.
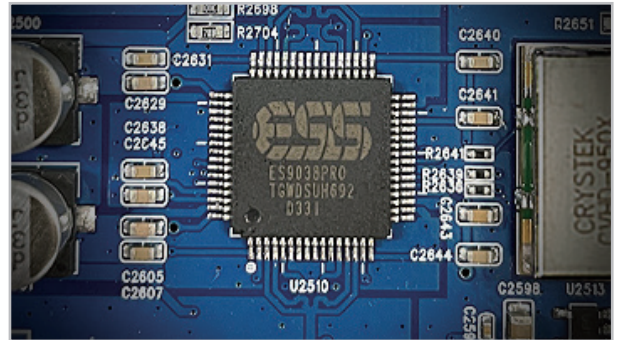
Technical Features

ES9038PRO DAC

It is equipped with ES9038PRO, the flagship DAC chip of ESS technology, a world-class DAC manufacturer.
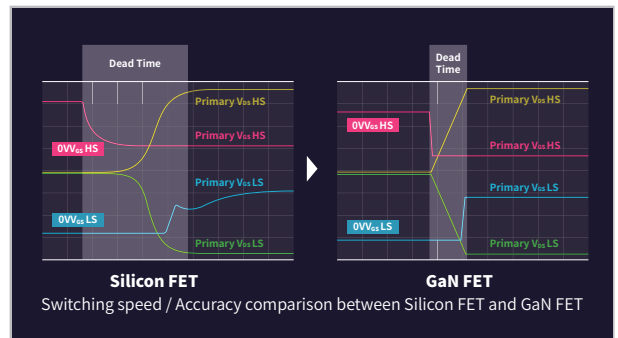
ES9038PRO has extremely low total harmonic distortion plus noise (THD+N) of -122 dB, and dynamic range (DNR) of 140 dB, making it the industry's best DAC chip. The maximum sampling frequency and bit rate are PCM 768 ㎑, 32 bit, and DSD512 is supported. In addition, it is equipped with ESS technology's exclusive jitter canceller to provide exceptional audio clarity.

GaN based Class AD Amplifier

The class-AD amplifier mounted on RS520 uses a new material GaN (gallium nitride) FET to dramatically reduce the "dead time" by 1/3 to maximize linearity.
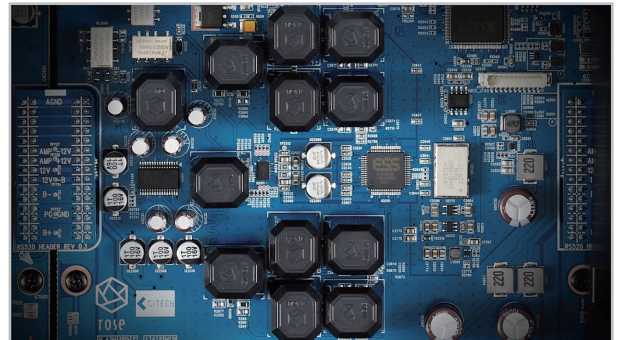
Please enjoy the powerful output of 250 W per channel with Hi-Fi ROSE's class-AD amplifier that maximizes operating speed and accuracy to achieve the perfect class-D amplifier structure.

Switching speed / Accuracy comparison between Silicon FET and GaN FET

Discrete OP AMP

Discrete operational amplifier developed by ROSE is applied to the IV circuit that is essential for current DAC.Hi-Fi ROSE focused on high open loop gain and aimed to achieve low open loop distortion, low noise, low drift, and low off set.In addition, this operational amplifier has a wide bandwidth and power supply range essential for high-quality analog audio amplification, adding a sense of depth to the sound.

So, by reproducing the vividness of the deep bass and treble like a live performance, it makes the resonance of the inter-band connection very comfortable.
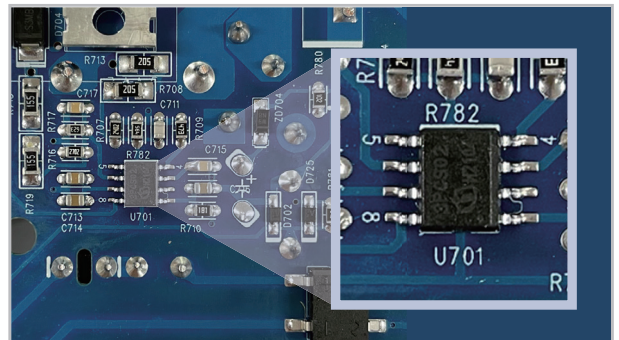

ACTIVE PFC

The main reason for applying power factor correction (PFC) is efficiency improvement.

※Active PFC efficiency: 95% / Passive PFC efficiency: 68 - 80%

By adopting Active PFC technique, the highest power saving effect with 95% efficiency can be expected. In addition, it can respond more effectively to a wide range of input power of AC 80 - 265 V, so the power quality can be improved and it does not produce audible audio hum noise.

Equalizer

RS520 supports the equalizer function (hereafter EQ) that can emphasize (boost) or attenuate (cut) a specific frequency band of a voice signal.

The RS520 EQ is a parametric equalizer that can set the frequency band for amplification and attenuation arbitrarily, and can adjust the bandwidth of the Q-factor for each frequency. Five frequency bands can be set, and each can be adjusted up to ±10 dB.
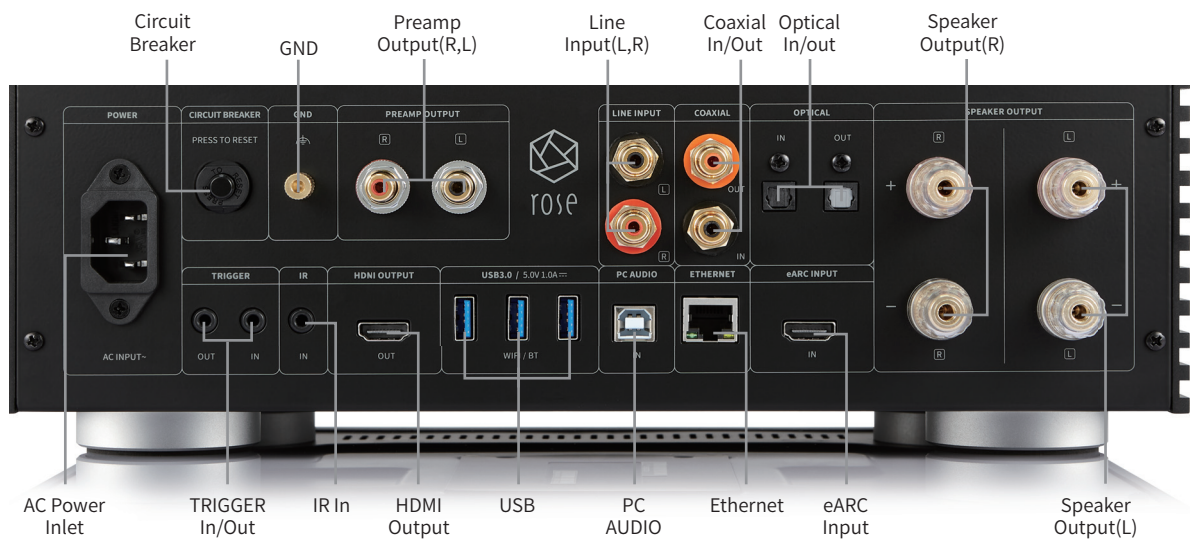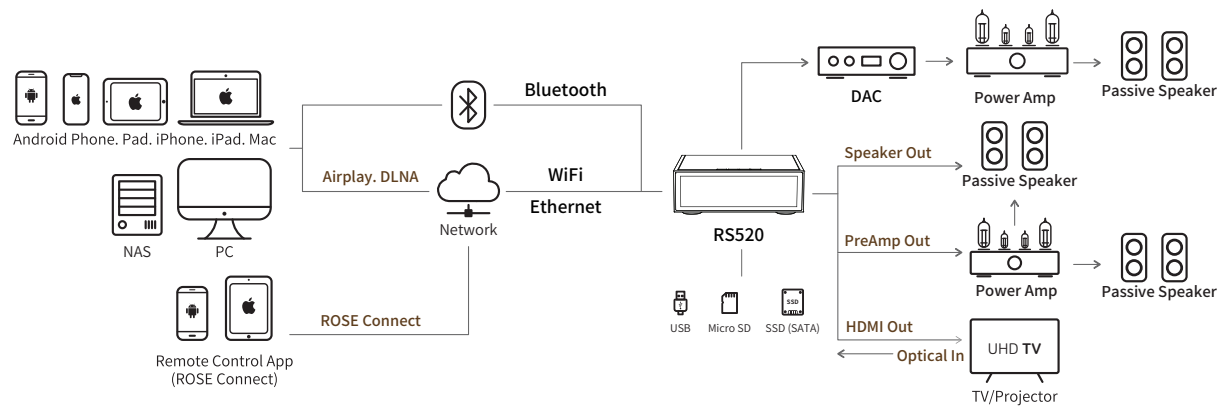
Connections

Front

Mute Button   Volume Control Button   Power Button

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

Tchaikovsky
SWAN LAKE SUITE

CANTATA   C·O·N·S·T·A·N·C·E   Franz Joseph Haydn   g Van Beethoven

wmaloss.oos.16bit 44.1KHz 2ch
Advanced All-In-One Network Strea
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Touch Panel

Rear

Circuit Breaker   GND   Preamp Output(R,L)   Line Input(L,R)   Coaxial In/Out   Optical In/out   Speaker Output(R)

POWER   CIRCUIT BREAKER   GND   PREAMP OUTPUT   LINE INPUT   COAXIAL   OPTICAL   SPEAKER OUTPUT

PRESS TO RESET   R   L   R   L   IN   OUT   R   L

rose   OUT   +   +

IN   −   −

AC INPUT~   TRIGGER   IR   HDNI OUTPUT   USB3.0 / 5.0V 1.0A   PC AUDIO   ETHERNET   eARC INPUT

OUT   IN   IN   OUT   WIFI / BT   IN   IN   R   L

AC Power Inlet   TRIGGER In/Out   IR In   HDMI Output   USB   PC AUDIO   Ethernet   eARC Input   Speaker Output(L)

Network Streaming

Enjoy real-time streaming services through DLNA, Airplay, and ROSE Connect.

Android Phone. Pad. iPhone. iPad. Mac

Bluetooth

NAS   PC

Airplay. DLNA

WiFi

Ethernet

Network

ROSE Connect

Remote Control App
(ROSE Connect)

RS520

USB   Micro SD   SSD (SATA)

DAC   Power Amp   Passive Speaker

Speaker Out   Passive Speaker

PreAmp Out   Power Amp   Passive Speaker

HDMI Out   Optical In   UHD TV

TV/Projector

Innovative
ROSE OS

ROSE Tube

Enjoy Endless Play of YouTube high-definition videos.

Music / Video

Play music and video files on a local storage device (USB / MicroSD / SSD). Also, you can build your home network library with a NAS connection. It is possible to categorize your music with numerous ways.

Roon Ready

RS520 is Roon-Ready device. It supports automatic network discovery, stable library operation, and multi-channel playback of high-quality sound sources.

Radio

Listen to more than 10,000 internet radio stations from all over the world. Register and listen to your favorite channel. It also offers Shazam, so that you can search for good songs on the radio right away.

TIDAL

Spotify (Spotify Connect)

qobuz

Apple Music   **Bugs**

Streaming Service

You can play high-quality sound sources from various streaming services. Easily integrate and play all existing features, such as music files, Tidal, Qobuz and Apple Music in one playlist.

CD

By connecting an external CD-Rom Drive via USB, spontaneous CD playback is possible. You can extract music files stored on a CD and save them to SSD, USB, or MicroSD.

Ultra HD 4K

Plays Ultra HD 4K Video

You can enjoy Ultra HD 4K video or ROSE Tube video files on a large display from a connected storage device (USB, external hard drive, SSD, etc.) via HDMI connection. Now, you can get the vivid experience of an opera house at home.

Rose Audio Engine

Hi-Fi ROSE can deliver pure audio data to DAC without loss by using RoseAudioServer, developed by ROSE, and realizes advanced high fidelity audio service by using various signal processing technologies.
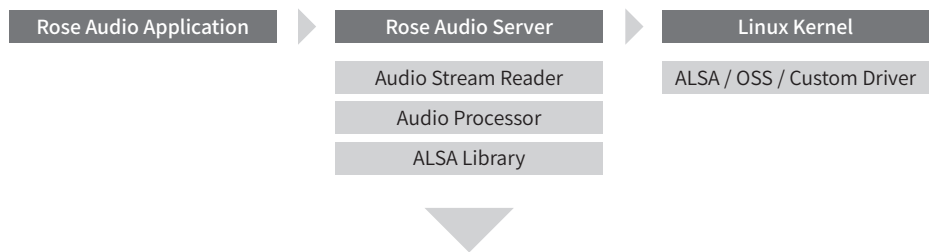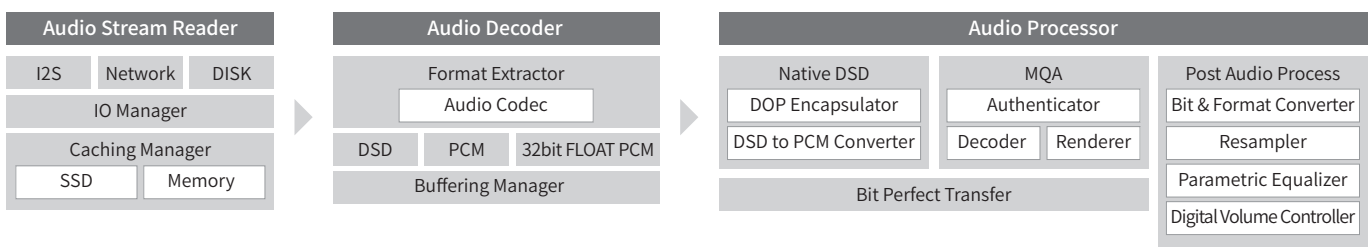
Figure 1. Rose Audio Architecture

Rose Audio Application	Rose Audio Server	Linux Kernel
	Audio Stream Reader	ALSA / OSS / Custom Driver
	Audio Processor	
	ALSA Library	

Figure 2. Rose Audio Server

Audio Stream Reader

I2S	Network	DISK
IO Manager		
Caching Manager		
SSD	Memory	

Audio Decoder

Format Extractor		
Audio Codec		
DSD	PCM	32bit FLOAT PCM
Buffering Manager		

Audio Processor

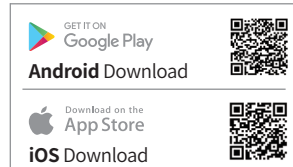| Native DSD	MQA	Post Audio Process
DOP Encapsulator	Authenticator	Bit & Format Converter
DSD to PCM Converter	Decoder / Renderer	Resampler
Bit Perfect Transfer		Parametric Equalizer
		Digital Volume Controller

Audio stream reader

Audio stream reader uses caching technology developed by Hi-Fi ROSE to process digital input signals using system interrupt, network jitter, and coarse clock without distortion.

Audio Decoder

Audio decoder can process various types of audio sources and codecs to extract DSD and PCM data, and in the case of a sound source using lossy codec, it decodes to 32bit float PCM to minimize distortion.

Audio Process

Audio process supports bit-perfect transmission, and packages and delivers audio data in a transmission format optimized for the connected DAC. It can handle full MQA decoding and native DSD, and provides an advanced hi-fi audio environment using various post-process modules developed by Hi-Fi ROSE.

Control directly from your mobile device with ROSE Connect!

It includes a Dedicated Remote Control Application that allows users to conveniently control and smartly manage ROSE devices. The remote control application works on various platforms including iPhone, iPad, Android phone, and PC.

· Color

Black   **Silver**

· Specifications

Part		Specifications
OS		Customized Android 7.1
Design	Size	346(W) x 328(D) x 127(H) mm
	Weight	8.1kg
	Display	12.6" TFT LCD & Capacitive Touch Screen (eDP)
CPU	Hexa Core CPU	Dual-core Cortex-A72 up to 1.8GHz / Quad-core Cortex-A53 up to 1.4GHz
GPU		Mali-T864 GPU, OpenGL ES1.1/2.0/3.0/3.1, OpenVG1.1, OpenCL, DX11
Memory		LPDDR4 4GByte
Network Connection	Ethernet	10/100/1000 BASE-T
	WiFi	802.11ac Dualband USB Wireless LAN Card (Dongle)
	Bluetooth	V4.2 (USB Dongle)
Audio Service	Streaming	Airplay / DLNA / Roon Ready / Spotify Connect / Bluetooth
	Music Service	TIDAL / Qobuz / Bugs / ROSE Tube / Internet Radio /ROSE Podcast / Apple Music
In/Output	Audio Input	Optical x 1, Coaxial x 1, Line-In x 1, USB DAC x 1,eARCx1
	Audio Output	Optical x 1, Coaxial x 1, Preamp-Out x 1
	Video Output	HDMI 2.0 x 1(up to 3840 x 2160 / 60Hz)
	Media Connection	File System : NTFS / exFAT / FAT32 Network Protocol : SMBv1 / FTP / WebDav Storage Interface : USB3.0 x 2, SATA x 1
Supported Codec	Audio	MQA, WAV, FLAC, AIFF, WMA, MP3, OGG, APE, DFF, DSF, AAC, CDA, AMR, APE, EC3, E-EC3, MID, MPL, MP2, MPC, MPGA, M4A, ALAC, PCM : 8kHz~768kHz(8/16/24/32bit per Sample), Native DSD : DSD64(2.8MHz)/ DSD128(5.6MHz)/DSD256(11.2MHz)/ DSD512(22.4MHz)
	Video	ASF, AVI, MKV, MP4, WMV, MPEG-1, MPEG-2, MPEG-4 H.263, H.264, H.265, VC-1, VP9, VP8, MVC, H.264/ AVC, Base/Main/High/High10 profile @ level 5.1 up to 4Kx2K @ 30fps H.265/HEVC, Main/Main10 profile @ level 5.1 High-tier up to 4Kx2K @ 60fps
Power	Input Voltage	AC100-240V 50/60Hz
	Power Consumption	150W
	Circuit Breaker	6A Thermal Circuit Breaker
Update		SW update via internet, USB OTA, ROSE Store
Remote Control Feature	Remote Controller	38kHz Infrared Ray(Within 10m of Operating Distance), Bluetooth Remote Control
	Remote App	ROSE Connect (Android, iOS) / Google PlayStore, App Store
Accessory		Power Cord x 1, Bluetooth Remote Controller x 1 (AAA Battery x 2), Manual x 1, SSD Screw x 4

Analog Audio Specifications		
Output Power	-	250W + 250W@ 8Ω, 4Ω
Sensitivity	Line in	2Vrms
	Pre Out	2Vrms
Power Bandwith	-3dB	10Hz ~85kHz, 8Ω, 200W
THD+N	Pre Out	0.00033%, 1kHz, 600Ω, 2Vrms
	Speaker	0.007%, 1kHz, 8Ω, 150W
Damping Factor	1kHz	150
Input Impedance	-	100kΩ
Output Impedance	-	50mΩ
Frequency Response	+1/-3dB	10Hz ~ 83kHz
Signal-to-Noise Ratio	Pre Out	124dB, 1kHz, 600Ω, 2Vrms
	Speaker	109dB, 1kHz, 8Ω, 250W