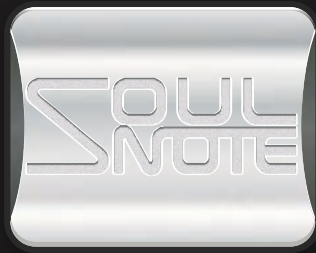
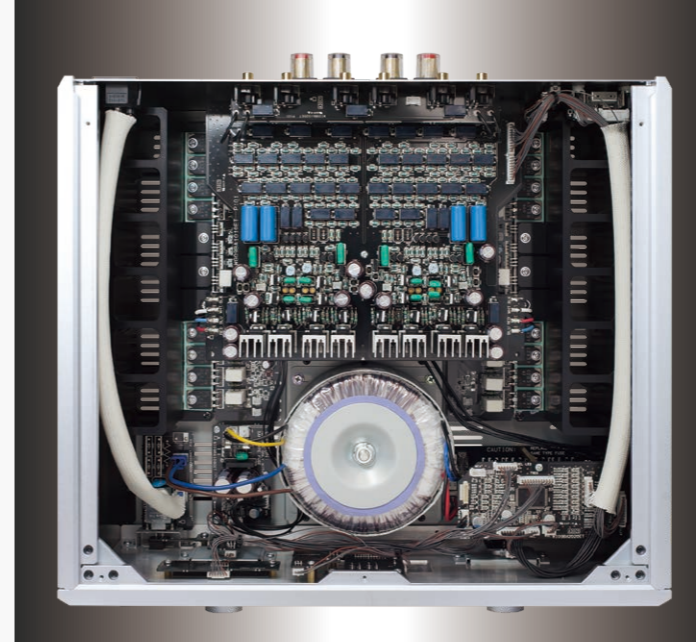


*2 series*



Reviving the Soul of Sound

# Integrated Amplifier A-2



## Perfectly balanced, discrete non-NFB channels

SOULNOTE's original perfectly balanced non-NFB channels have been fully optimized and incorporated to put give sound quality the highest priority. Voltage feedback has been completely eliminated in the output stage, the voltage amplification stage, and in the power supply circuits. Because of their impact on sound, DC servo and current mirror circuits have been eliminated, while both the constant current and bias circuits in the voltage amplification stage employ simple circuitry layouts that only use constant current and voltage elements (2SK209 and LEDs, respectively) carefully selected for utmost sound quality. The power amplification stage is perfectly balanced all the way through the emitter follower output. A-2 is designed to reproduce music in a dynamic, open, clear and soulful.

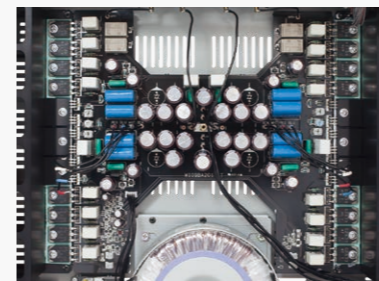
## Relay-switching balanced attenuator

The volume isn't controlled by electronics or a rotary slider, but instead incorporates SOULNOTE's original relays in a balanced attenuator system that switches high-precision resistors. This dramatically increases clarity, and allows the sound image to emerge in three dimensions. It also significantly improves quality in a low volume level without fear of gang errors.

## An ideal construction

The input signal line has been minimized by concentrating the input terminals, input selectors, volume, and the non-NFB voltage amplification stage onto a single multi-layered board. The board does not use even a single shield or filter that could negatively impact the sound in order to eliminate every factor that reduces sound quality, such as the effects of vibrations from connecting cables, inductance components, radiation noise, etc. This ideal construction has been achieved thanks to the relay-switching balanced attenuator.

## 4-layer board with 70μ thick copper foil



Composed of the output stage and the main power supply, the power block features an inner layer of 70μ thick copper foil as the power supply bus bar and thus minimizes high current loops in the commutating capacitor → output transistor → loudspeakers + terminals → loudspeaker terminals → commutating capacitor cycle. Eliminating inductance components in high current lines creates outstanding frequency characteristics and stability.

## Direct connections

Connectors have been eliminated in the power supply lines as well as the signal lines, and cables are instead soldered directly to the boards for direct connections without connector.

## Chimney-type heat sink

The heat sink uses a newly developed chimney shape that provides extremely efficient cooling with less vibration.

## Ferocious power supply



The power supply utilizes a 600 VA bifilar wound toroidal transformer, the most powerful in SOULNOTE's history. Commutating current loops have been minimized by placing ± independent rectifying circuits from the fast recovery diode close to the transformer winding. The commutating capacitor is supplied by ELNA specially developed for SOULNOTE and selected for its sound quality. Connecting multiple capacitors of small size in parallel helps control and optimize frequency characteristics and mutual capacitance.

## 4 parallel high-speed output transistors



The final stage is composed of 4 high-speed transistors (2SC2837/2SA1186) with low Cob and high FT connected in parallel. This combines with the strong non-NFB power supply to provide generous loudspeaker driving power.

## Output transistor selection

The output transistors have been selected and paired by using a specially designed device that measures the Vbe current value while avoiding any influence from rising temperatures in the output transistors. Perfectly aligning the 4 parallel current transistors creates abundant loudspeaker driving power and clear, precise sonic reproduction.

## 4-step Darlington configuration

High frequency transistors create a 4-step Darlington configuration to drive the final transistors completely, thereby optimizing the amount of each current. This produces plentiful drive power for each loudspeaker.

## Housing design that prioritizes sound quality

A spike grounds the power supply transformer directly, and while combining the spikes with uneven cross-sectional aluminium panels to control resonance has increased rigidity, the aluminum panels are not directly bonded in order to eliminate unwanted resonance. The top cover, which has a particularly large influence on sound quality, features a dual-component construction that joins the base plate and the aluminum panels at three points so that they do not dampen each other. By grounding it at three points without fixing it to the aluminum portions of the housing itself, this design succeeds in pulling down the sound focus while still keeping it expansive.

## Single non-NFB differential BTL channels

The conventional BTL monaural principle that uses the left and right channels of the stereo amplifier in reverse phases can produce powerful sound quality, but the sound impression tends to blur with sounds tending to clump together because of the effects from GND lines or matching two amplifiers. The BTL monaural principle in the A-2, however, adopts a new approach that partitions the differential output of one non-NFB differential amplifier each for the left and right final stage. This creates an expansive sound with vigorous, yet delicate BTL driving.

## Two types of monaural modes

In addition to BTL monaural mode, in addition to BTL, the bi-amp monaural mode can be also selected that distributes the monaural input to the left and right channels.

## Power amplifier mode

The power amp mode interrupts the power supply to the microcomputer and bypasses the selector and volume. This increases the SN ratio. XLR and RCA input can be also selected in this mode.

## Select from six possible use cases

The following six use cases are available.  
 Stereo pre-main amplifier  
 BTL monaural pre-main amplifier  
 Bi-amp monaural pre-main amplifier  
 Stereo power amplifier  
 BTL monaural power amplifier  
 Bi-amp monaural power amplifier



**[Specifications]** ●Rated output / 100W×2(8ohm),200W×2(4ohm),400W(BTL MONO 8ohm) ●Total harmonic distortion / 0.03%(50W 8ohm) ●Frequency characteristic / SPEAKER(8ohm 1W):3Hz to 240kHz(±1.0dB) ●Input sensitivity/impedance / LINE1,2,3(balance):700mV/16kohm,LINE4,5,6:700mV/8kohm ●S/N ratio / 110dB (IHF A network) ●Power voltage / 230V AC 50Hz ●Power consumption / 355W, 125W(during idling) ●Maximum external dimensions / Main unit:430(W)×160(H)×423(D)mm ●Weight / 20kg ●Included accessories / Remote control,Spikes,Power cord

## Integrated Amplifier A-2

PREMIUM SILVER / PREMIUM BLACK



<Included accessories>



# D/A Converter **D-2**



## The DSS uses the LMX2594 from Texas Instruments



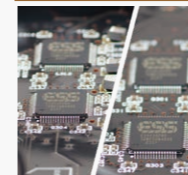
D/A converter formats that recreate the required master clock from standard clocks typically use a DDS (Direct Digital Synthesizer). The performance of external clock generators in this format guarantees extreme frequency accuracy (e.g. how many seconds of deviance will occur over tens of thousands of years), but jitter (fluctuations in waveform width arising in the clock) and the resulting phase noise are highly dependent on the performance of the DDS. By convention, audio equipment generally uses DDS-specific ICs with 10 ps (picosecond) jitter functions, but the D-2 is the first device to use Texas Instrument's PLLatinum™ RF LMX2594 synthesizer for an audio DDS. The LMX2594 synthesizer was developed for radars and measurement instruments and boasts the world's highest specifications with an efficiency index of -236 dBc/Hz and jitter of 45 fs (femtosecond, 1/1000 of a picosecond). This ultralow jitter DDS results in an overwhelmingly clear and deep spatial presentation when inputting the high-precision external clock and using the built-in TCXO.

## Supports 10 MHz external standard clock inputs



Using a DDS with jitter functionality that surpasses quartz means that the D-2 comes with 10 MHz external standard clock inputs, a SOULNOTE first. The internal clock relies on a high performance TCXO boasting stunning phase noise (-121 dB at 10 Hz offset). It also features a high frequency relay with mechanical contacts to avoid additional jitter from the IC when switching between the internal clock and an external clock generator. The internal clock power supply shuts off and vibrations stop when using an external clock generator, this way removing any risk of mutual interference.

## Uses 4 ES9038PRO (industry's first)



2 ES9038PRO circuits are employed in each channel for the upper and lower differential complimentary inputs in this SOULNOTE original fully symmetric non-NFB discrete amplifier, completely driving the initial stage in the non-NFB differential amplifier. The IV circuits are extremely simple with only one resistor to eliminate TIM distortion that can be so problematic with feedback type IV. With an extremely powerful 120 mA, the two ES9038PROs are used in each channel to allow natural music playback bursting with life. The ES9038PRO operates in synchronous mode to obtain the highest sound quality.

## Dual mono construction using fully discrete non-NFB differential amplifiers

The SOULNOTE original discrete fully symmetric non-NFB differential amplifiers are arranged in a dual mono construction that fully isolates each channel, including the power supply rectifier. Connecting cables have been eliminated for sound signals and in the power supplies. Wiring from the transformer has also been shortened, since this is a major cause of current loops.

## 400 VA bifilar wound high regulation toroidal transformers with eight windings on the secondary side

The D-2 incorporates the newly developed power transformers with eight windings on the secondary side that are capable of regulation similar to that of very high power amplifiers. Independent rectifier circuits in each stage prevent interference. Because transformers are a source of vibration, SOULNOTE has used only one in each unit to simplify the vibration type and has constructed the unit body so that any unwanted vibration is transmitted away from the body through a spike placed directly under each transformer.

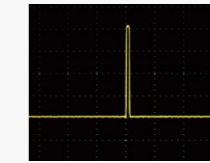
## Non-oversampling mode

In addition to the conventional FIR oversampling mode, the D-2 also has the new non-oversampling mode, which is basically a non-NFB version adapted to operate in the digital domain. This mode does not generate the pre- and post-echoes observed in FIR oversampling. It is also suppressed extremely low noise levels with analog outputs, with no difference in levels between the two modes.



### Impulse output waveform with an FIR oversampling filter (D-2 analog output)

Pre- and post-echoes are artificial "sounds" created by data calculations before and after the data is interpolated. They make waveforms like sine waves appear smoother, but calculation algorithms can affect the sound quality or ambiguity and be added to the time axis.



### Impulse output waveform in Non-oversampling mode (D-2 analog output)

This waveform can only be achieved by combining a non-NFB discrete amplifier with superb transient response performance. Because music waveforms are actually a series of impulse waveforms of different heights, the non-oversampling mode eliminates any ambiguity in the time axis information, creating more realistic and natural sound quality and an

expansive listening environment to the human ear, which is extremely sensitive to the time axis.

\* The non-oversampling mode cannot be used with DSD.

## Noise countermeasures that don't rely on filters

The D-2 uses 4 boards wrapped in 70 micron thick copper foil that eliminates noise by optimizing the printed circuit board layout. Noise countermeasures that don't rely on filters that can impact sound quality like flight, etc. are employed throughout, and each mode keeps unwanted radiation below the noise floor.

## An independent digital board layout with consideration of future upgrades

The digital boards are independent structures with one portion connected to the rear panel, allowing for upgrades in the future. Analog circuit connections use soldered pin heads, eliminating sound quality deterioration caused by contact resistance in connectors.

## Expandable to dual mono DAC

It can be select between STEREO, MONO Lch, and MONO Rch modes on the D-2. In MONO mode, the ES9038PROs in the opposite channel are disabled, thus doubling the power margin and making channel separation practically infinite.

## Uses the groundbreaking Bulk Pet transfer method



USB-Audio generally transfers data using the Isochronous transfer method. The D-2 uses Bulk Pet, a new Bulk transfer method developed by Interface Corporation. The Bulk transfer method results in reduced loads for computers and D/A converters, ushering in the next dimension in playback sound quality.



[Specifications] ● Input format(USB) / PCM, DSD (DoP v1.1, ASIO native) ● Input format(Coaxial · AES/EBU) / PCM, DSD(DoP v1.1) ● Supported sampling frequency(USB) / Max.768kHz (PCM) / Max.22.6MHz (DSD) ● Supported sampling frequency(Coaxial · AES/EBU) / Max.192kHz (PCM) / Max.2.8MHz (DSD64 DoP v1.1) ● PCM quantization bit rate(USB) / 16bit,24bit,32bit ● PCM quantization bit rate(Coaxial · AES/EBU) / 16bit, 24bit ● Digital input / USB (Type B), coaxial x2(SPDIF), AES/EBU x2 ● External clock input / 10MHz (BNC50 ohm) ● Analog output / XLR x1, RCA x1 ● Analog output level(XLR) / 5.6Vrms ● Analog output level(RCA) / 2.8Vrms ● Frequency characteristic / 2Hz to 120kHz (+0/-1dB) ● S/N ratio / 110dB ● Total harmonic distortion / 0.008 % (NOS/176.4kHz) ● Analog filter / Two-dimensional passive ● Power voltage / 230V AC 50Hz ● Power consumption / 56W ● Maximum external dimensions / Main unit: 430(W)×160(H)×405(D)mm ● Weight / 17kg ● Included accessories / Spikes,Power cord

## D/A Converter **D-2**

PREMIUM SILVER / PREMIUM BLACK



<Included accessories>



# Phono Equalizer E-2



## Non-NFB phono equalizer circuits dedicated to photoelectric cartridges



The equalizer components rely on differential emitter bypass channels incorporating new circuitry that significantly lowers circuit impedance. SOULNOTE's original perfectly balanced non-NFB circuits are free from electrical stress and do not require phase compensation or bandwidth limitation. These circuits can fully accommodate photoelectric cartridges, which are released from the weight and inductive resistance limitations of coils and magnetic circuits. The combination of the photoelectric system's exceptional transient responsiveness with non-NFB produces a shockingly vibrant and vivid music soundscape.

\* Photoelectric cartridges do not support past Toshiba or Trio cartridges.

## Wide support of old-time EQ curves pre-RIAA (with MC/MM)



Six kinds of Roll-Off (high range attenuation frequency), four kinds of Turn Over (low range amplification frequency), and six kinds of Low Limit (ultralow frequency amplification limit) are all independent of each other and can be changed individually. Together, they offer a total of 144 types of curves, from Decca and Columbia to the first SP records (with Flat response). By using these individual adjustment knobs, the most appropriate equalizer curve can be selected, or, alternatively, the equalizer curve can be also customized to use the included equalizer curve sheet. We use mechanical relays for switching the equalizer curve to ensure the highest priority on sound quality.

## Perfectly balanced non-NFB phono equalizer circuits (with MC/MM)



The differential amplifier gain has precise RIAA characteristics as a result of the balanced load circuits and uses SOULNOTE's original perfectly balanced non-NFB circuits to eliminate the shortcomings of conventional NF and CR type circuitry. The boards for right and left channel are completely independent of each other, while the dual mono configuration creates precise and expansive spatial presentations.

## MC LOAD switching

The E-2 comes equipped with six types of load impedance switching functions to extract the most from the MC cartridges in use.

## Inputs capable of connecting with four types of systems

The E-2 allows simultaneous connection and switching between four inputs: MC balanced, MC/MM unbalanced (2 types), and dedicated photoelectric cartridge.

## MONO mode

The E-2 has a Mono switch to output the left and right channels in mono.

## Chimney-type heat sink

The heat sink is a newly developed chimney type that pursues a shape with high cooling efficiency and low intrinsic vibration.

## Featuring a 400 VA massive toroidal transformer and high-speed non-NFB power supply



Using an extremely powerful 400 VA bifilar wound transformer as a single unit unveils the inherent potential of the GND and power supply. The combination of multiple capacitors of small size connected in parallel with a high-speed non-NFB regulator results in delicate playback that recreates a totally accurate soundscape reflecting sonic details, such as the air rising from the stage.

## MM load capacity switching

Three kinds of load capacity switching functions are employed to fully demonstrate the extreme capabilities of MM cartridges.

## Phase inversion function

The E-2 is equipped with an phase inversion function that switches between the balanced outputs' HOT and COLD to eliminate sonic warping as a result of the circuits.

## Low gain function

The E-2 features a low gain function to reduce the output level in response to the available headroom of connected preamplifiers, etc.

## Degaussing function (with MC/MM)

This function shortens the inputs. By enabling this feature, the phono cartridge can be effectively degaussed during record playback. It can be also used as a MUTE function when the stylus settles on the record.

## Balanced output

A strong balanced output is obtained by employing a fully balanced non-NFB buffer amplifier that is even capable of driving loudspeakers.



[Specifications] ● Input sensitivity / MC:0.4mV,MM:4mV,OPT:50mV ● Gain / MC:72dB,MM:52dB,OPT:30dB ● Rated output / Balanced output:2.8V, Unbalanced output:1.4V ● RIAA deviation / ±0.2dB ● MC Load resistance / 3ohm, 10ohm, 30ohm, 100ohm, 300ohm, 1kohm ● MM Load capacitance / 100P, 200P, 350P ● MM Load resistance / 47kohm ● Equalizer frequency / ROLL-OFF [kHz]:1.59, 2.12(RIAA), 2.59, 3.18, 6.89, FLAT, TURNOVER [Hz]:250, 390, 500(RIAA), 630, LOW LIMIT [Hz]:50(RIAA), 71, 100, 125, 150, FLAT ● Power voltage / 230V AC 50Hz ● Power consumption / 48W ● Maximum external dimensions / Main unit: 430(W)×160(H)×410(D)mm ● Weight / 20kg ● Included accessories / Spikes, Power cord

## Phono Equalizer E-2

PREMIUM SILVER / PREMIUM BLACK



<Included accessories>



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\*As of October 2022 Specifications, standards, and appearance are subject to change without notice for improvement.

