

Evolution Series 600i Integrated Amplifier



Power

Emotion

Soul

The **MOON 600i** Integrated Amplifier is designed to continue where the award winning MOON i-7 left off. Intended to meet the needs of the most demanding music connoisseurs, it is fully differential dual-mono design, rated at 125 watts/channel into 8 ohms, offering authority, finesse and superb control. Using a variety of new technologies developed since the introduction of the Evolution Series, the **MOON 600i** provides more sonic transparency and accuracy than ever before

New technologies include (i) the **M-eVOL2** volume control with a phenomenal 530 steps allowing for an extremely precise level adjustment just like the MOON P-8 Preamplifier; (ii) New **MOON output transistors**, specifically designed for use in our amplifiers, provide tighter and more visceral bass performance, as well as unprecedented linearity throughout the entire frequency spectrum; (iii) An input stage circuit which reduces noise, preserving image focus and integrity like never before. Although rated at "only" 125W per channel (250W at 4 ohms), the **600i** embodies both authority and finesse at all levels that suggests a much more powerful amplifier, just like all MOON products before it.

Redefining the Integrated Amplifier !



Significant Design Features

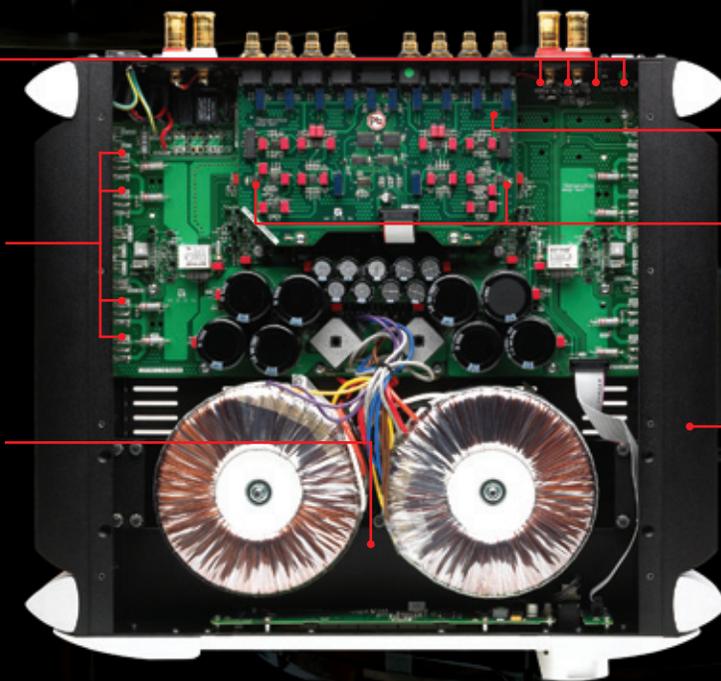
RS-232 port for (i) full unsolicited bidirectional feedback and (ii) firmware updates; IR input for external control; 12V trigger for remote operation; SimLink controller port allows for 2-way communications between other compatible MOON components

Proprietary MOON Bi-Polar output transistors with unprecedented signal linearity and ultra-low noise characteristics

An oversized dual-mono power supply using custom proprietary toroidal transformers

▲ Our own "no overall feedback" design resulting in genuine real-time amplification, a more accurate musical reproduction with respect to tonality, virtually non-existent intermodulation distortion and the elimination of common phase errors resulting from feedback

▲ Fully balanced differential circuitry in a dual-mono design



Four-layer PCB tracings resulting in a much shorter signal path and dramatically improved signal-to-noise ratio

M-eVOL2 volume control circuit using MDAC's (operating in a current steering R-2R configuration) which alter the audio signal's amplitude yielding no sonic degradation of the signal, regardless of the selected volume setting; A total 530 individual volume steps in 1dB and 0.1dB increments

Ultra rigid chassis construction to minimize the effects of external vibrations

▲ For each line input: M-Lock for "user selectable" maximum volume setting lock-out and "Gain offset" with a ± 10 dB range; can be configured to be "home-theater ready", where the gain section of the 600i is bypassed

▲ "Class A" output to 5 watts for greater efficiency

Rock-solid reliability and extreme flexibility



Simaudio Ltd. has been designing and manufacturing innovative, leading-edge audio and video products since 1980. MOON products have been globally recognized for their world-class performance, garnering numerous accolades for this outstanding achievement. Our products are engineered and built in Canada, utilizing advanced, efficient, "green" assembly techniques with strict quality control. Furthermore, our manufacturing processes are part of our philosophy, whereas the high quality and long-life of MOON products are the best way to preserve our environment, avoiding premature obsolescence. MOON products meet or exceed all international requirements for safety, performance and durability. At Simaudio, great music matters. However, great music for a lifetime matters most.

The transistors used in the MOON 600i's output stage perform what can be best described as electrical gain of the music signal. Higher quality transistors will yield an amplified signal with greater integrity. In addition, since each channel of an output stage uses numerous transistors, they must all be accurately matched to each other to maintain this integrity.

MOON amplifiers have always used bipolar transistors in their output stages for several significant reasons. When compared to other types of amplification transistors, bipolars offer:

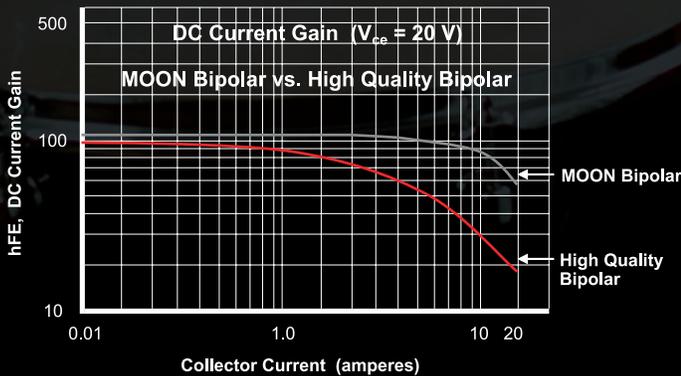
- ▲ Wider bandwidth
- ▲ Lower distortion
- ▲ Excellent reliability and a longer life span
- ▲ High Efficiency
- ▲ High resistance to ESD (electrostatic discharge)

We have managed, at a great expense, to have bipolar transistors manufactured to our own exceedingly high standards and specific requirements. When compared to more readily available high quality bipolars for use in audio amplifiers, MOON Bipolars offer the following advantages:

- ▲ Unprecedented gain linearity
- ▲ A green component containing no lead
- ▲ Lower noise floor
- ▲ Even wider bandwidth
- ▲ Improved bass response
- ▲ Greater signal integrity
- ▲ Even greater reliability at higher output levels
- ▲ A more consistent hFE (the DC current gain of a transistor) which allows for more accurate and easier matching of multiple Bipolars.



The exceptional gain linearity of MOON Bipolars is very significant in the sense that it results in many of these aforementioned advantages. To illustrate the significant effect of this gain linearity when compared to a quality bipolar transistor found in a high-performance audio amplifier, refer to figure 1 below which shows the difference in DC current gain as a function of the transistor's output current:



Optimal sonic performance is always achieved regardless of the amplifier's output level.

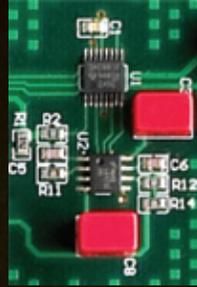
Technical information

The M-eVOL2 volume circuit uses Multiplying Digital-to-Analog Converters (MDAC's) to vary the amplitude of the music signal based on the chosen volume setting. Since it is used in a dual-mono circuit topology, there is one MDAC for each channel. As well, the audio signal ALWAYS remains in the analog domain and is never degraded at any volume setting.

Each MDAC (TI DAC8812) uses a pair of current steering R2-R ladder DACs that allows for operation in a fully balanced differential mode. Like the M-Ray volume circuit found in our MOON P-8 reference level preamplifier, it provides incremental adjustments in 0.1dB steps, yielding a total of 530 unique volume steps.

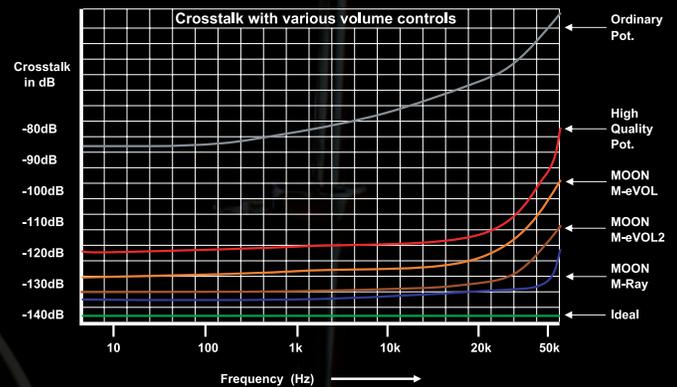
Introduced in the MOON 600i Integrated Amplifier, the benefits of the M-eVOL2 volume circuit, when compared to the original M-eVOL, include:

- ▲ A blacker background
- ▲ An improvement in signal-to-noise-ratio of +10dB in magnitude
- ▲ Improved signal matching between the left and right channels
- ▲ Much more precise incremental volume adjustments (0.1 db vs. 0.5db)
- ▲ Increased bandwidth
- ▲ Closely approaches the performance of the M-Ray volume circuit



The M-eVOL2 proprietary volume control circuit yield virtually perfect signal level matching between the left and right channels as well as staggeringly low crosstalk levels.

Crosstalk typically increases as a function of frequency; the higher the frequency, the greater the amount of crosstalk. This is a behavioural characteristic common to all volume controls, regardless of the circuit topology. Higher quality volume circuits will have a significantly lower crosstalk measurement throughout the entire bandwidth as demonstrated in this figure:



The perfect scenario would have an identical crosstalk measurement of -140dB (green) across the entire frequency spectrum, but this is not realistic. The fully discrete M-Ray volume circuit found in the MOON P-8 Preamplifier yields an astonishing -135dB (blue) at 1kHz. The M-eVOL2 circuit, found in the preamplification section of the MOON 600i Integrated amplifier, measures an incredible -130dB (brown) of crosstalk at the same frequency. The MOON P-7 Preamplifier with our M-eVOL circuit, produces a remarkably low -126dB (orange) of crosstalk at 1kHz. Finally, a very high quality potentiometer based volume circuit will have a crosstalk level -118db (red) at best and an ordinary potentiometer circuit may reach -82dB (grey).

As crosstalk increases in the upper frequencies, the width of the soundstage becomes compromised and consequently diminishes the accuracy of sonic reproduction.

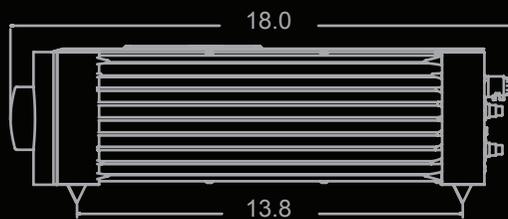
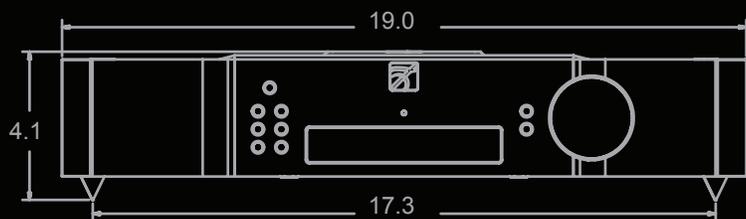
Virtually perfect soundstage reproduction ...
a genuine sense that the musicians
are playing right in front of you.

MOON 600i Specifications

Configuration	Fully balanced, dual-mono
Power Supply Transformers	2 x 400VA
Power Supply Capacitance	80,000 μ F
Circuit Topology	Open Loop
Balanced inputs (XLR)	1 pair
Single-ended inputs (RCA)	4 pairs
Input Impedance	23,700 Ω
Input Sensitivity	490mV – 6.0V RMS
Preamplifier line-level output (RCA)	1 pair @ 50 Ω
Output Device Type - Amplifier	Proprietary MOON BiPolar - 4 per channel
Output Binding Posts	Gold-plated WBT
Output Power @ 8 Ω / 4 Ω	125 / 250 watts per channel
Output Impedance	0.03 Ω
Damping Factor	> 267
Volume Steps	0.5dB from 0-30 / 0.1dB from 30-80
Gain Control	M-eVOL2

Gain	37dB
Signal-to-noise Ratio (Preamplifier / Amplifier)	120dB (20-20kHz) / 105dB @ full power
Maximum Output Voltage	35 Volts
Slew Rate	35V/ μ s
Maximum Current - Peak / Continuous	30 amperes / 18 amperes
Frequency Response	10Hz - 100kHz +0/-0.1dB
Crosstalk @ 1kHz	-100dB
Intermodulation Distortion	Unmeasurable
THD (20Hz - 20kHz)	< 0.015% @ 1 watt / < 0.04% @ 175 watts
Remote Control	All Aluminum Full-Function
Display Type	8 character dot matrix LED
Power Consumption @ idle	45 Watts
AC Power Requirements	120V / 60Hz or 240V / 50Hz
Shipping Weight	48 lbs / 21 Kgs
Dimensions (W x H x D, inches)	19.0 x 4.1 x 18.0

Specifications subject to change without notice



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