

Master clock generator equipped with ultra high precision rubidium oscillator
 Digital audio synchronized to one high precision master clock
 New support for 10 MHz and 22.5792 MHz master clock outputs

Talk of flawless sound produced by an audio system connected together with a high precision master clock has been circulating between high-end audiophiles in various forms. As an example, the three dimensional effect of the sound stage gives the listener an actual feel of the high ceiling of a concert hall in addition to the width and depth of the original performance. The listener is treated to a pure and focused image of the playback sound that gives a sense of reality as if one could reach out and touch it. When the final note of the musical instrument fades away, you almost perceive the gradual silence like the color of a dark veil. This is truly an ultimate achievement of audio playback that "conveys music" so close to the original sound it leaves an unforgettable impression on the listener.

With the aim of enhancing the true potential of ESOTERIC digital players, the clock generator "G Series" was redesigned as a new generation of devices with improved functionality, power and flexibility.

The G-01 uses a high precision Rubidium oscillator with a frequency precision of ± 0.05 ppb (parts per billion) or ± 0.00005 ppm which provides optimum stability as an audio clock. This next generation clock generator supports master clock outputs of 10 MHz and 22.5792 MHz.



Master Clock Generator **G-01**

Master clock generator

Every digital audio device operates with an internal circuit generating the clock signals, or heartbeat, required to operate that device. This master generator is an extremely stable oscillator that supplies external clocks to digital devices (such as a transport, D/A converter, Super Audio CD player) equipped with clock input terminals. The master clock generator supplies clock signals with a higher degree of purity and stability than clocks generated internally by digital devices and vastly improves the sound quality. By operating connected devices off the same highly stable master clock, timing errors called jitter are virtually eliminated greatly improving imaging and dimensionality while darkening the background.

Ultrahigh precision rubidium oscillator installed as the heart of the unit

An American-made rubidium oscillator with a frequency precision of ± 0.05 ppb = ± 0.00005 ppm is used as the core of this extraordinarily accurate timing device. This oven-controlled oscillator significantly improves the performance of the clock generator. This oscillator module has been manufactured to ESOTERIC's demanding specifications with sound quality and stability being given top priority. The sound quality one would expect from our best model in the master clock generator series has been achieved.

Newly-designed discrete clock output driver circuit configuration

G-01 has adopted a newly-designed discrete clock output driver circuit configuration. The circuit uses an ultra high-speed transistor that is optimal for generating digital waveforms for which ultrafast speed and a high degree of accuracy are required. Combined with a heavy-duty power supply, this circuit contributes to major improvements in sound quality by providing an accurate, stable timing signal to audio devices.

Power section with sufficient capacity

The G-01 clock generator has a powerful power supply section that supports its basic performance. Three power supply circuit boards, a total of 15 power supply regulators, and independent power supplies for each circuit block have been installed to minimize mutual interference between circuit blocks and to supply clean energy to all parts. A large toroidal transformer, which enables highly efficient and high power actuation, is used as the main component in the power supply which is essential to the sound quality. An EI core transformer is used in the display section. A

series of multiple capacitors are used for a ripple filter circuit and Schottky barrier diodes are used for quick response supporting fast digital processing which assists the accuracy of the clock's signal generation.

10MHz clock and 22.5792MHz master clock outputs

G-01 can output a 10 MHz clock (sine wave or square wave) as well as 22.5792 and 24.576 MHz master clocks that are compatible with ESOTERIC's original "Direct Master Clock Link."

Three separate output systems

G-01 can output 100 kHz and 10 MHz (sine wave) in addition to clock signals of 1x, 2x, 4x, and 512x multiples (22.5792 MHz/24.576 MHz) of the base frequency (44.1 kHz or 48 kHz) from three separate A/B/C output sections. Moreover, in frequency expansion mode (EXP), G-01 can output 8x, 16x, 32x, 64x, 128x, and 256x multiples of the clock frequency that enables it to supply clock signals to a wide range of devices, including professional audio or video equipment. Each of these systems has two output ports supplying clock signals to a maximum of six devices. The output frequency can be set individually for each of the six ports from A1 to C2. If a single device is connected, all output ports other than the A1 port can be turned off. This feature has been added to avoid deterioration of sound quality occurring through unnecessary inter-component interference.

10 MHz sine wave clock outputs

A 10 MHz square wave clock can be output from any of the output terminals of A, B, and C. In addition, two systems are designed specifically for devices equipped with 10 MHz sine wave requirements.

External 10 MHz/1 pps input

A 10 MHz or 1 pps reference signal can also be input externally by connecting an ultra high precision external clock. In addition to the input reference signal mode, the new "Rubidium + external input" mode is also available. When a GPS receiver is connected to an external input terminal and the "Rubidium + external input" mode is selected, the internal rubidium oscillator is synchronized with higher center frequency precision, and allows more stable clock signal output from rubidium oscillator than the crystal controlled oscillator built into the external GPS receiver, which makes the most of advantages of a high precision GPS system.



Rubidium clock oscillator module



Master clock generator equipped with high precision crystal oscillator

Digital audio synchronized to one high precision master clock

New support for 10 MHz and 22.5792 MHz master clock outputs

Talk of the flawless sound produced by an audio system connected together with a high precision master clock has been circulating between high-end audiophiles in various forms. The three dimensional effect of the sound stage gives the listener an actual feel of, say, the high ceiling of a concert hall in addition to the width and depth of original performance. The listener is treated to a pure and focused image of the playback sound that gives a sense of reality as if one could reach out and touch it. When the final note of the musical instrument fades away, you almost perceive the gradual silence like the color of a dark veil. This is truly an ultimate achievement of audio playback that "conveys music" so close to the original sound it leaves an unforgettable impression on the listener.

With the aim of enhancing the true potential of ESOTERIC digital players, the clock generator "G Series" was redesigned as a new generation of devices with improved functionality, power and flexibility.

G-02 uses a high precision oven-controlled crystal oscillator (OCXO) that provides optimal stability as an audio clock. This next generation clock generator can output a master clock of 10 MHz and 22.5792 MHz, perfect for controlling both audio and computer based devices.



Master Clock Generator G-02

Master clock generator

Every digital audio device operates with an internal clock circuit generating the clock signals required to operate that device. The master clock generator is an extremely stable oscillator that supplies external clocks to digital devices (such as a transport, D/A converter, Super Audio CD player) equipped with clock input terminals. The master clock generator supplies clock signals with a higher degree of purity than clocks generated internally by digital devices and thus it vastly improves the sound quality. By operating connected devices off the same, highly stable master clock, timing errors called jitter are virtually eliminated vastly improving imaging and dimensionality while darkening the background.

Ultrahigh precision OCXO installed as the heart of the unit

The master clock generator uses a high precision crystal oscillator with a frequency precision of +/-0.01 ppm (parts per million) that is provided with custom tuning designed specifically for ESOTERIC. G-02 has a built-in, oven-controlled crystal oscillator (OCXO) that generates stable oscillation under varying conditions. This is made possible by assembling a quartz crystal resonator and oscillation circuit in an oven that maintains the internal crystal and critical circuitry at a constant temperature. G-02 achieves a very high frequency stability of +/-0.01 ppm under external temperature conditions of -20 °C to 70°C.



Newly-designed discrete clock output driver circuit configuration

G-02 has adopted a newly-designed discrete clock output driver circuit configuration. The discrete circuit uses a high-speed transistor that is optimal for generating digital waveforms for which ultrafast speed and a high degree of accuracy are required. Combined with a heavy-duty power supply, this discrete circuit contributes to major improvement of the sound quality by providing an accurate, stable timing signal to audio devices.

Heavy-duty power supply unit

The master clock generator is equipped with a heavy-duty power supply unit that fully supports its high level of performance. A large R-core transformer featuring low loss magnetic flux leakage has been selected for the G-02. A series of several capacitors and Schottky barrier diodes are used as a smoothing circuit for quick response to support fast digital processing, contributing to the generation of highly accurate clock signals. For the display, an independent power transformer and a dedicated power supply circuit have been installed for each circuit block to minimize mutual interference between blocks.

Support for 10 MHz clock and 22.5792 MHz master clock outputs

G-02 can output a 10 MHz clock and 22.5792 and 24.576 MHz master clocks that are compatible with ESOTERIC's original "Direct Master Clock Link."

Three separate A/B/C output systems

G-02 can output 100 kHz and 10 MHz in addition to clock signals of 1x, 2x, 4x, and 512x multiples (22.5792 MHz/24.576 MHz) of the base frequency (44.1 kHz or 48 kHz). Moreover, in frequency expansion (EXP) mode, G-02 can output 8x, 16x, 32x, 64x, 128x, and 256x multiples of the clock frequency that enables it to supply clock signals to a wide range of devices, including professional equipment. Each of these systems has two output ports supplying clock signals to a maximum of six devices. The output frequency can be set individually for each of the six ports from A1 to C2. If a single device is connected, all output ports other than the A1 port can be turned off.

External 10 MHz input port

G-02 is equipped with an input port that is capable of receiving a 10 MHz reference signal from an external device. This port can be connected to devices such as the Rubidium clock and GPS clock to further upgrade the system.

ESOTERIC's original gold-plated BNC ports

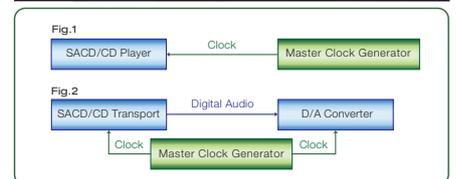
G-02 uses ESOTERIC's original BNC ports that provide highly reliable contact. These durable and secure ports can handle even heavy and thick high-end cables.

Superb chassis construction for optimal performance

Since the oscillator is generally susceptible to vibrations, chassis construction has been designed with utmost care. G-02 has a highly-rigid thick aluminum chassis that minimizes the small vibrations that could affect clock precision.

Esthetic rounded form

Thick aluminum material is used for the front, side and top panels, as well as the front corners. The G-02 chassis design has inherited the tradition of the ESOTERIC product line of a separate type digital player with screw-less rounded top and corners. The appearance of G-02 is in perfect harmony with ESOTERIC digital players.



Specifications

Clock outputs 44.1 kHz setting 44.1/88.2/176.4/352.8/705.6 kHz, 1.4112/2.8224/5.6448/11.2896/22.5792 MHz **48 kHz setting** 48/96/192/384/768 kHz, 1.536/3.072/6.144/12.288/24.576 MHz **Both settings** 100kHz/10MHz **Connectors** BNC coaxial **Output level** 1Rectangular wave (TTL level/75Ω) **Frequency stability** Within ±0.01ppm(-20°C to +70°C) **Frequency precision** Within ±0.01ppm (when shipped new) **Output clock stabilization (approximate time in minutes)** Until oscillator stabilizes after power turned on:15/PLL locking time:1 **Standard frequency input** **Input frequency** 10MHz(within ±10ppm) **Connector** BNC coaxial **Input levels** Sine wave:0.5-1.0 Vrms/50Ω, Square wave:1.5-3.0Vpp/50Ω **General Power supply** AC 230V, 50Hz/AC 120V, 60Hz/AC 220V, 60Hz **Power consumption** 14 W(while warming up)/10W(when stable) **Dimensions (W × H × D, including protrusions)** 445mm × 106.5mm × 360mm (17 1/2" × 4 2/8" × 14 1/8") **Weight** 10.2kg (22.49 lb.) **Included accessories** Power cord x 1, Warranty card x 1, Owner's manual x 1

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