

ESOTERIC

Master Clock Generator **G-01XD**



# Master Sound Discrete Clock

The “Master Sound Discrete Clock” is a proprietary OCXO\* module developed by Esoteric for music reproduction. From the Esoteric SC1 custom crystal oscillator to the temperature control circuit and its control program to achieve high precision, all completed in a unique discrete circuit. We have paid close attention to every detail and improved the quality of musical expression by designing our own crystal oscillator circuit, previously packaged as a general-purpose module, into a unique discrete circuit to produce sound quality closer to our engineers’ ideals.

\* OCXO = Oven Controlled Crystal Oscillator

## Esoteric SC1 Custom Made Crystal

From its high-accuracy oscillator circuitry to the core crystal oscillator itself, the Master Sound Discrete Clock is a completely custom-made component produced exclusively by Esoteric. The material forming its crystal provides a more natural tone quality, extremely low phase noise, and exceptional stability when used in combination with the G-01XD’s advanced temperature control system. Since quartz crystals generate their clock signals through vibration, or resonance, there is a profound correlation between the physical characteristics of the base material and ultimate sound quality. Larger crystals tend to produce a higher drive level that is less easily affected by high resistance within the circuit. They also produce a more stable oscillation. Therefore, every detail in the manufacturing process, from cut shape to size, was carefully examined in pursuit of creating an oscillator that offers the best electrophysical characteristics for ultimate sound quality. Based on a highly reliable variety of quartz crystal developed for the aerospace industry, Esoteric was able to complete the development of its exclusive musical reproduction-dedicated SC1 crystal. The crystal material itself is grown slowly over an extremely long period of time, and then SC (Stress Compensated) cut into its final shape. To ensure optimal control of its resonant vibration, Esoteric proudly introduces the largest sized mass-produced crystal in its class, carefully selecting and utilizing only those pieces whose center frequency fluctuations are within Esoteric’s strict standards.



## Master Sound TC\* – Esoteric’s Proprietary Temperature Control Program

Crystal frequency accuracy is affected by temperature. Therefore, temperature control is the most important factor in maintaining high clock accuracy. Esoteric’s proprietary “Master Sound TC” is a total temperature control system that maximizes crystal performance. We have developed not only the hardware but also the control software in-house to ensure that the Master Sound Discrete Clock delivers the highest possible performance. In a typical OCXO, crystals are stored in a hot oven and kept at a constant temperature. However, crystals differ in the temperature at which they are most stable. In our Master Sound TC system, the oven temperature is controlled by a program customized for each crystal to ensure that each crystal is always at the right temperature for stable performance. The result is an extremely natural and pure clock output with excellent musicality.

\* TC = Thermo-Control

### Master Sound TC – Unique Calibration Process

The temperature characteristics of each SC1 crystal are measured during production, and an individual characteristics chart is created; the SC1 is assembled into a module, and based on this chart, the oven microcomputer control program is individually adjusted to the ambient temperature at which the oscillation is most stable. This series of processes, including burning-in, is carefully carried out for each individual unit.



## 128-Step Multi-Step Controlled Heater to Maintain Uniform Oven Temperature

The heater, which maintains a uniform temperature inside the oven, is also a concentrated Esoteric specialty. The heaters in ordinary modules are simply controlled to repeatedly turn on and off in conjunction with the falling and rising temperatures inside the oven, but in the Master Sound Discrete Clock, the temperature is finely controlled by a heater with 128 steps of multi-step control. In addition, by minimizing the current fluctuations that occur when the heater is turned on and off, the adverse effects of current fluctuations on the crystal oscillator circuit are eliminated.

## Four Independent Power Supplies for the Ultimate in Musicality

The Master Sound Discrete Clock, in which all circuits are discrete, also has four independent power rectification circuits for the oscillator circuit, buffer amplifier, heater, and control circuit. The power supply for the oscillator circuit and buffer amplifier uses a large toroidal power transformer to maintain the instantaneous power and purity of the clock signal. The power supply for the heater and control circuits uses a separate EI core transformer. By avoiding mutual interference between circuit blocks, high sound quality is achieved.



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“Master Sound Discrete Clock” takes the musical expression of digital players one step further.

The G-01XD is a master clock generator equipped with Master Sound Discrete Clock, an OCXO clock module developed in-house to enhance the musical expression of digital players. The G-01XD brings out the full music playback potential of the Esoteric K-01/N-01 series, as well as various digital players that can be connected to a 10 MHz external clock.



### Esoteric-HCLD Output Buffer Circuit

The G-01XD is equipped with the highly acclaimed "Esoteric-HCLD" output buffer amplifier circuit originally designed for the Grandioso C1X preamplifier. It takes advantage of its powerful current transfer capability and 180MHz wide frequency response to deliver pure 10MHz sine wave clock signal to connected digital players.

### Four 10MHz Sine Wave Clock Outputs Compatible with 'Adaptive Zero Ground' Mode

The G-01XD is equipped with four 10 MHz sine wave clock output terminals. A toggle switch provided for each terminal allows you to switch between "normal mode" and "Adaptive Zero Ground mode", in which the ground level for each output terminal is always driven to 0 V, the reference potential of the signal, allowing you to choose the sound quality you prefer.

### A Custom Designed Coaxial Cable with MIL-standard SMA connectors

A special custom coaxial cable, carefully selected for sound quality, is used for the critical wiring inside the G-01XD. The connectors are gold-plated SMA connectors that comply with MIL standards. The output connectors are gold-plated BNC connectors with precisely matched impedance = 50Ω to increase transmission reliability and reduce loss.

### Unique Chassis Construction

The chassis construction is also specially designed for vibration-sensitive master clocks. The front and side panels are made of heavy-duty, thick-walled aluminum to suppress external vibrations. The Master Sound Discrete Clock module inside the chassis is freely mounted and mechanically grounded by its own weight without the use of mounting screws. Esoteric's unique Pinpoint Foot System (Patent No. 4075477, No. 3778108) does not use screws to attach the foot base to the lower chassis, but is held in place by the weight of the chassis when installed. By eliminating as many screws as possible to reduce stress concentration on these vibration-sensitive components, a natural vibration damping effect can be achieved, resulting in superior sound quality. In addition, the top plate has a semi-floating structure that is not fixed with screws, resulting in an open sound.

- This product is available in two different power supply variations as shown in the chart above. Make sure that the voltage shown on the rear panel matches the AC line voltage in your area.
- The shape of the AC inlet and plug of the supplied power cord depends on the voltage rating and destination country.

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## G-01XD Master Clock Generator

Clock Output Frequency:	10MHz	Power:	120V AC 60Hz, 220-240V AC 50/60Hz
Frequency Precision:	Within $\pm 0.01$ ppm (when shipped new)	Power Consumption:	15W (when stable)
Connectors:	BNC x 4	Overall Dimensions (W×H×D):	445 x 131 x 360mm (include protrusions)
Output Level:	Sine wave 0.5 $\pm$ 0.1Vrms / 50Ω	Weight:	12.8kg



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