

HEGEL MasterClock™

HEGEL CD Direct MasterClock™ Generator Technology.

In a CD-player one of the most important parts is the master clock signal. The master clock is controlling the rhythm of the CD-player by telling the DAC chip exactly when to convert the audio signal from digital to analog. To have the best possible sound, it is vital to have a master clock that has a very stable clock frequency and lowest possible jitter.

Jitter is timing errors in clock generator circuits. A master clock generator should have a very stable time period. If the timing period of the master clock generator is moving back and forth in time this timing error is called jitter. Jitter for a clock generator is measured in pico seconds, and the number of pico seconds of timing jitter is a measure for the quality of the clock generator. To have the best possible sound, it is best to have a lowest possible jitter value.

All Hegel CD-players have less than 10 pico seconds of jitter.

There are many mechanisms that can generate jitter in a master clock generator: power supply noise, clock oscillator topology, quality of quartz crystal resonator, clock driver circuit and circuit board layout.

Most CD-players are using a master clock located at the CD servo-decoder board in the CD-player. Because the servo-decoder board has got a lot of high- and low frequency noise from the CD servos and the digital CD decoder circuits this is not a good solution. A Master clock generator on the CD servo-decoder board will have an unstable frequency and high jitter because of the high levels of signal noise and power supply noise on this board. In addition to having the Master clock generator on the CD servo-decoder board, many CD-players are also using a SPDIF serial digital interface from the CD servo-decoder board to the DAC-board, and this will give decreased sound quality because of digital audio data related jitter.

The most expensive CD systems are using a separate Master clock generator that is connected to the CD servo-decoder and to the DAC board. This is an expensive solution, but will always give the best sound. All Hegel CD-players are using a very high precision Master clock generator with extremely low jitter, and this Master clock generator is located on the DAC board inside the CD-players. This high precision Master clock is distributed directly to the DAC chip and directly to the CD servo-decoder board. In this way the performance of the Hegel master clock generator is equivalent to very expensive CD-systems.