Grimm Audio CC1

Master Clock

Reviews : Accessory

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Grimm Audio, founded by four renowned Dutch audio engineers, manufacture a range of interesting products, including the LS1 loudspeaker, the AD1 converter, the MP1 mic preamp and the CC1 master clock, reviewed here. The CC1 is a 1U device with a distinctive wooden front panel that features a (perhaps laser-cut?) logo and legends. Three stud push-buttons are used to select the basic clock source (internal 44.1 or 48 kHz, or slave modes) and multiplier values (x1, x2 or x4) for the two independent output connection groups. Pinprick LEDs indicate the current mode.

A fused IEC socket accepts mains power, and feeds a linear power supply that's factory-set for the appropriate supply voltage. Sixteen word clock outputs are provided, 12 for group one, and a further four for group two, all on BNC connectors. An external word clock input can be hooked up via another BNC, and takes precedence over an AES3 reference input on XLR socket. A single AES3 output on another XLR normally follows the group-two output sample rate. Audio data can be passed from the AES3 input to the AES3 output if required, and in this mode the output is re-clocked with the same sample rate as the reference source.

Four sets of DIP switches on the rear panel allow configuration of the various operating modes and interface parameters. The first eight-way switch sets the AES3 audio data pass-through to on or off, and switches the external reference unlock mode between Hold and Mute. If an external reference is lost, the Hold setting will maintain the sample rate within 1ppm, whereas in Mute mode, all outputs will be muted as soon as the external reference is lost. Either way, the front-panel Slave LED flashes to warn of the lost reference signal. The other six switches in this first block, plus six more in the second DIP switch set, are used to set the individual word-clock outputs in group one for 25Ω or 75Ω output impedances. These two options allow the CC1 outputs to work with all possible combinations of 75Ω or high−impedance terminated clock inputs and differing sensitivities.

Another four-way DIP switch provides the same source-impedance options for the four outputs in group two, while the last DIP switch inverts the polarity of the clock signals for each of the group-two outputs, to cater for devices that synchronise on the falling edge rather than the rising edge. In applications where the unit's configuration is fixed, a 'key-lock' mode can be activated by holding the sample-rate button during power-up. The front-panel buttons are then disabled and the unit is fixed in the configuration set before power-down. The same procedure releases the key-lock mode.

The CC1 clock system is derived from that designed for the company's AD1 converter, and is claimed to be an extremely stable and very low-jitter clock that uses a radical discrete crystal oscillator circuit. Apparently, 125 separate elements are tested during its construction! Grimm Audio claim that the CC1's stability is better than the best commercial measurement equipment available — which makes testing their claims a little tricky! Nevertheless, the CC1's specifications state a remarkable 90dB suppression of external reference jitter at 10Hz, improving at 60dB per decade thereafter. This is achieved in part by a very slow phase-locked-loop (PLL) which can take 20 seconds or more to achieve full lock, and switches to an even slower mode once locked.

In all my practical and bench tests, the CC1 worked perfectly, both as a master and when slaved to an external reference. Did it improve the sound quality of my digital equipment compared to the master clocks I usually use? Not that I noticed… However, there is no doubt that the CC1 is a very stable and highly accurate master clock, even when slaved to external references (which is where so many master clocks fall down). It is also designed and constructed to extremely high standards, provides a useful degree of configurability and versatility, and looks very cool in the rack! Hugh Robjohns

£2250 including VAT.
www.grimmaudio.com

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