

It has got to the point where it is almost embarrassing to review yet another Meridian digital product, lest I be accused of joining the Meridian fan club. However, the 607 is a vital introduction, even if its application is rather limited at present. An A/D converter, its purpose is to encode real world analogue signals into digital code for transmission to storage units or recorders such as a CD 'U' matic or a domestic R-DAT transport.

A professional recording engineer might well consider a 607, although the lack of a balanced input is something of a disadvantage. The 607 is a must for the D6000 since it allows this speaker to reproduce existing sources – tape, tuner and analogue disc (this last if suitably pre-equalized and amplified to a volt or so).

Inputs are via gold-plated phono sockets. The 'A' input offers a full level sensitivity of 2V and a higher sensitivity alternative of 530mV. The input impedances are 10.2kohms, and a rather lower 3.9kohms for the higher sensitivity.

An additional input is available selected by code 'B'. This by-passes the input

does have a red warning light which indicates the last 3dB approach to full level. The option of switchable pre-emphasis is available on the 'A' input, which provides a 6dB or so S/N ratio improvement where the source is known not to contain high signal levels above 5kHz. Other facilities include the sampling frequency switch which may be set to 44.1kHz and 48kHz, the former ideal for direct CD mastering.

To some degree, a good performance in the digital audio field boils down to sensible choices for the major processing integrated circuits; origination of these complex devices is quite beyond the resources of specialist audio makers. The heart of this unit is the latest low-bit, 64-times oversampled Delta Sigma ADC by Crystal, type CS5326; this has stereo inputs and generates a 16-bit output code. (An 18-bit alternative is available in this chip series which will encourage professional users.) At a 44.1kHz prime sampling rate, the first alias or ultrasonic response cannot appear before 1.4MHz and hence a transparent, phase-linear low-

order filter may be placed at the input. In fact, the 'B' input has only a first-order filter at 100kHz or so, the roll-off partly dependent on source impedance.

No chances have been taken with low level resolution, and a linear analogue-like decay into noise is assured by the optimum dither content of 1 bit of triangular probability distribution signal, this properly hardware generated. This correctly gives a broad band noise floor at the -92dB level, but helps to ensure perfectly monotonic encoding. In theory, good accuracy should be maintained to -120dB below full level and indeed below this. Dither thus allows system linearity to transcend the theoretical 16-bit code limitation of 98dB.

The designer has also chosen another costly chip for the digital output generator. It has the advantage of inbuilt sub-code software, and provides a clean powerful drive to the digital outputs. In fact, it is a full specification RS232 driver of 100mA capability and would serve for balanced drive to the AES-EBU standard.

Another feature is the importance

MERIDIAN 607 ADC

amplifier, and with a 2.5V sensitivity is quite an arduous load comprising a 0.01 μ F capacitor buffered by a 100ohm series resistor. Source impedances above 100ohms will carry some penalty of a mild response roll-off at high frequencies, plus other effects of the load. Here I am thinking of more delicate sources such as a valve-tube pre-amp. The 607 is generous in regard to its SPDIF digital outputs, with two phono plus two optical.

The 607 does not have level meters (usually part of the digital recorder) but

This high-quality digital encoder will complete a Meridian digital system, or provide the key element in a professional-standard recording chain

by Martin Colloms

placed on the generation of a low jitter oscillator signal, its performance close to the limit for a 16-bit full bandwidth PCM code. Only one of the two oscillators runs at a time, and this section is placed in its own screened area.

Sound quality

The bulk of the listening was done via the direct input which does not have the emphasis option. Careful matching was required in view of the high input capacitance and its potential to curtail the input frequency response, and/or heavily load the source. Given tape and direct-cut disc programme, the best driver I had available turned out to be the Krell KSP-7B pre-amp. A slight loss of quality was observed via the 'A' input (which was buffered) but in some cases this kinder input loading was reflected by a small gain in source quality, offsetting the differences.

Judging encoder sound quality is a difficult task for a number of reasons. For example, there is the largely unknown definition of the source quality fed to it, the lack of comparative references, and the need for an uncompromised replay of an encoder's digital signal so that it is seen that it is the *encoder* which is fairly on trial. By a process of substitution and combination it is possible to take control of these factors and to come up with a rough numerical value which relates reasonably well to scores for amplifiers and for CD players.

A primary application for the 607 is the conversion to the digital audio format of any existing analogue source to feed the all-digital Meridian D6000 loudspeaker (*HFN/RR* Jan '91). Using a Meridian

