

WANT TO KNOW A SECRET? IT'S NOT A 16 BIT WORLD ANYMORE. While it's true that your DAT recorder is most likely 16 bit, your hard disk recorder/editor is probably 16 bit, your CD player is certainly 16 bit, your ears (depending upon your age and the number of metal concerts you've been to), could well be in the 22 bit range! Transferring audio from the analog to the digital domain is a critical process - not to be taken lightly if you strive for high quality output from your studio. If your recorder or workstation stores 16 bit audio, you must make sure that your A/D converter uses each and every one of those bits in the most effective way. The converter must be greater than 16 bits and must incorporate intelligent dithering and noise shaping. If your ears can hear more than 16 bits, there's no reason to continue with a 16 bit A/D converter.

The Symetrix 620 is an outboard 20 bit A/D converter for faultless transitions between analog and digital domains. If you're presently using a 16 bit recorder or workstation, the 620's dither and noise shaping functions can markedly reduce your low level noise and distortion. If you've already moved up to 20 bit equipment, then chances are good the 620 will provide a clearly audible improvement over your internal A/D converters.

How exactly, can the 620 improve the sound of my 16 bit mixes? Although 16 bits can theoretically give you 96 dB of dynamic range, the fact remains that low level signals are not well represented by the lower bits of a 16 bit word. One of the advantages of analog tape was that low level audio could fall below the recorder's noise floor and still be discernible. Not so with digital. Undithered signals that fall below the digital "quantization" level are lost and gone forever, covered over by quantization noise. If your console boasts a 110dB dynamic range and you mix to a 16 bit DAT (even if it's equipped with an 18 bit converter), your dynamic range is reduced to 96dB at best. Even if you feed your DAT digitally from a 20 bit A/D, the DAT will simply throw away (truncate) the last four bits. No questions asked.

Our solution is to capture the detailed analog audio (which in many cases has well over 110dB of dynamic range) and intelligently process it into the 16 bit storage medium. The 620 does this through use of dither and noise

shaping. The 620's dither algorithm (D16) improves the effective dynamic range of 16 bit sounds (or 8 bit if you're working in multimedia), by changing the characteristic of quantization noise from a harsh, signal related distortion to a smooth hiss. The D16 algorithm is used when the signal is headed for further digital domain processing such as editing, compression, EQ, etc.

If you're mixing to your final destination (such as DAT) and your signal will undergo no further digital processing, select the NS16 algorithm which is a combination of dither and noise shaping. When converting from 20 to 16 bit resolution the 620's noise shaper moves the quantization noise out of the midrange region where the human ear is most sensitive. (See graphs on reverse side of this page.)

What sets the 620 apart from the internal A/D converters that came with my equipment? Lots of things. Most internal A/D converters are "bare bones". The 620 carefully integrates a 20 bit delta-sigma IC with a powerful DSP processor to noise shape, dither (technically re-dither), downsample (44.1 to 22.05 conversion) and remove DC in the digital domain. While the advantages of the 620 are numerous, the bottom line is the sound. If you do sound for a living, then do something nice for yourself. Call us at one of the numbers below for more information and a list of Symetrix 600 series dealers. We think you'll be glad you did. •

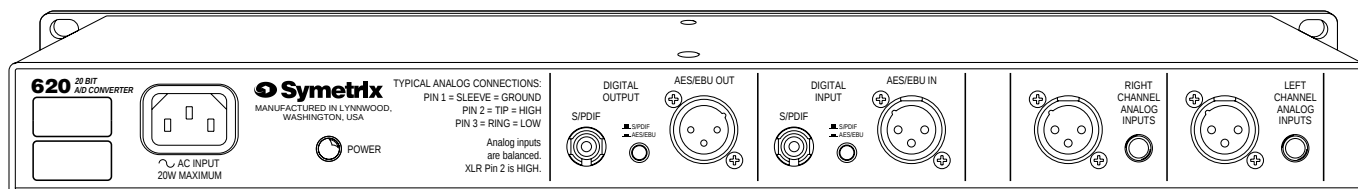
APPLICATIONS

- Mixing to DAT
- CD Mastering
- Sample Library Mastering
- Multimedia Mastering
- Outboard A/D for hard disk & modular digital multi-tracks

FEATURES

- 20 bit quantization
- Selectable dither & noise shape
- Selectable output word size
- AES/EBU & S/P DIF in and out
- Real time sample rate conversion from 44.1 to 22.05 for multimedia

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SPECIFICATIONS

Input/Output

Analog Inputs

Two, Balanced Bridging
XLR (pin 2 high) and 1/4" TRS
+ 24 dBu, Balanced
+16 dBu, Unbalanced

Maximum Analog Input Level

Digital Inputs

XLR-AES/EBU and RCA pinjack - S/P DIF(Sony/Phillips)

Digital Outputs

XLR-AES/EBU and RCA pinjack - S/P DIF(Sony/Phillips)

Performance Data

Frequency Response

±0.5dB, 20 Hz-20 kHz

THD+Noise @ -60 dBFS (-38 dBu)

>104 dBFS

Dynamic Range

see graph below

Crosstalk @ 1kHz, +22 dBu Input

<-95 dB

Common Mode Rejection @1kHz, 1v RMS

>85 dB

Sample Rates

48 kHz, 44.1 kHz, 32 kHz, 22.05 kHz

Headroom LEDs

-54 dBFS to 0dbFS (clip)

Quantization

20 bits/sample

Specifications subject to change without notice.

Physical

Size (hwd)

1.72 x 19 x 4.3 inches, 4.37 x 48.3 x 10.922 centimeters

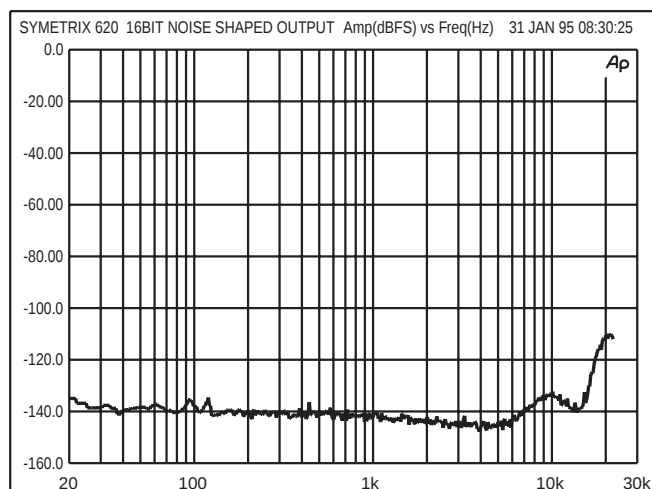
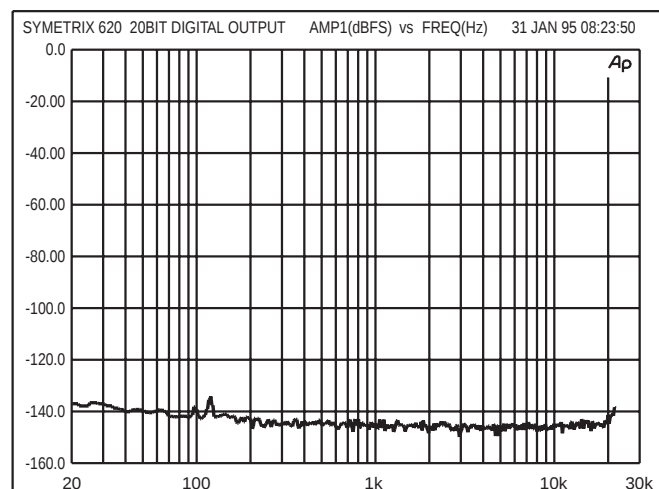
Shipping Weight

8 lbs, 3.64kg

Electrical

Power Requirements

117V nominal, 95-130V AC, 50-60Hz, 20 watts maximum
230V nominal, 165-255V AC, 50Hz, 20 watts maximum



620 ARCHITECTS AND ENGINEERS SPECIFICATIONS

The analog to digital converter shall be a high performance unit occupying a single rack space (1U).

The unit shall have two line level, balanced, analog inputs. Input gain shall be controlled via two variable potentiometers over a 15dB range. Alternatively, a fixed input gain reference of +4dBu may be selected.

The A/D converter shall provide a digital output signal conforming to the AES/EBU

digital audio format (AES-3) as well as a second digital output conforming to the S/P DIF format (IEC-958).

The unit shall internally generate sample rates of 48kHz, 44.1kHz, 32kHz, and 22.05kHz. When converting from analog to digital, the converter shall quantize 20 bits.

Means shall be provided to select the following output word formats: 20 bit, 16 bit dithered (using a triangular probability random noise generator), 16 bit noise shaped and dithered, 8 bit noise shaped, and 8 bit dithered.

The A/D converter shall provide means to accept incoming digital audio signals at a 44.1kHz sample rate and output the same signals at a 22.05Hz sample rate.

The A/D converter shall be a Symetrix, Inc. model 620 20 bit A/D converter.

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