

Merlin Arbitrary Waveform Generator

Specifications

Number of analog output channels: 32 min., 256 max.

Channel resolution: 16 bits

Sampling Rate: 256 Ksamples/sec each channel

Monotonicity over temperature: 16 bits

Differential Linearity Error: ± 0.5 LSB

Bipolar Zero Error: ± 8 LSB max.

Noise Floor: -120 dBv / root Hz

Full Scale Ranges: $\pm 10V$, $\pm 5V$, $\pm 2.5V$, 0-10V, 0-5V, 0-2.5V (other options quoted)

Settling time to 1/2 LSB for 20V step: 7 μ S

Gain temperature coefficient: 2ppm FSR/ $^{\circ}$ C

Offset temperature coefficient: 2ppm FSR/ $^{\circ}$ C

Memory: 8M, 16M, 32M, 64M (upgrades available)

Filters: Customized filters quoted upon request

Software

The Merlin Arbitrary Waveform Generation Software provides an easy menu-driven interface to assist the user in generating the desired waveform. One may select from standard waveforms, define a set of points, or enter a mathematical function. Custom waveforms may be saved to disk for later use. Plot functions allow viewing of both the digitized and analog waveforms. Plots may be sent to the video monitor or printer. The waveform may be continuous or run a specific number of cycles. Advanced options will give the user the ability to manipulate the sampling rate for special functions.

Hardware

A system block diagram of the hardware is shown in Figure 1. The Keyboard, Mouse and SVGA Monitor interface to a 486 CPU running the Windows 95 operating system. The waveform data and control parameters are transferred across the VMEbus to the Merlin 9531 FPDP RAM Module containing 8 Mbytes of SRAM. The waveform data is then sent across the high speed FPDP Interface to the Merlin 9431 D/A Modules.

The analog outputs support a variety of full scale ranges. Square waves of up to 128 kHz may be generated with $\pm 10V$ outputs.

Additional channels and memory may be added. The current design supports up to 256 channels and 64 Mbytes of RAM. Optional filter modules may be quoted upon request.

