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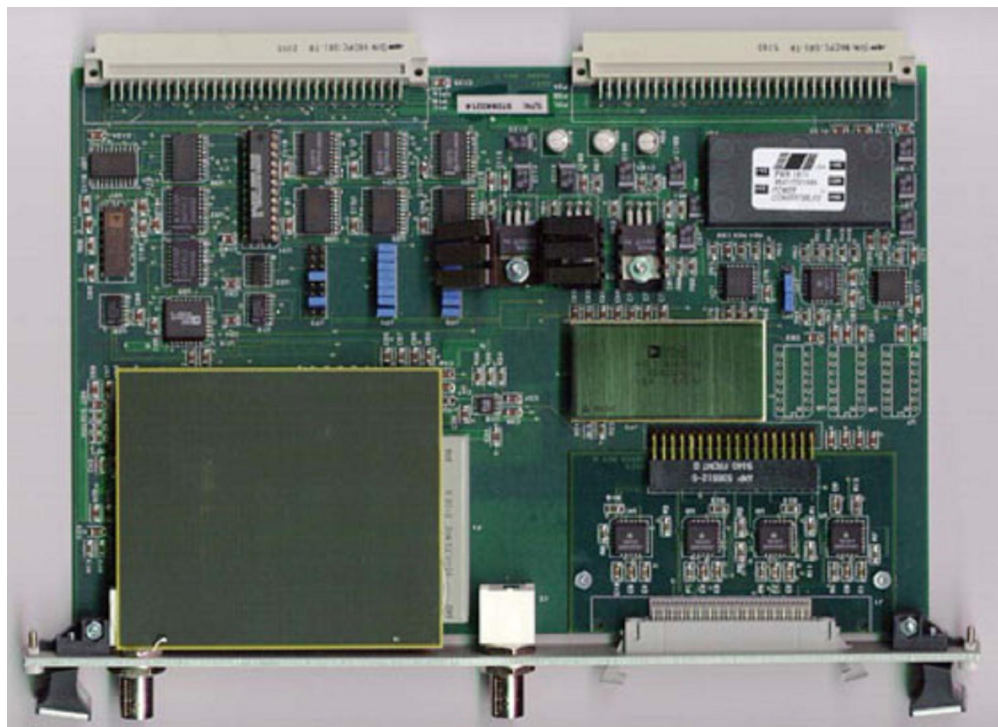
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### VME 12 Bit 25 MSPS Digitizer Subsystem

The AD250 is a single 6U VME board that implements the front end signal conditioning and variable gain amplifiers in addition to a high speed analog to digital converter operating at a sample rate of 25 MHz.

The AD250 features an analog RF preselector to reject out of band interference that would otherwise consume dynamic range.

Two variable gain amplifier stages provide up to 80 db of gain control, allowing the board to acquire low level signals or signals that have been processed by other signal conditioning systems.



An onboard antialiasing filter restricts the input bandwidth to approximately 11.5 MHz.

The analog to digital converter has resolution of twelve bits that are available as differential ECL or TTL signals on the front panel. The user may choose either option for data and clock at time of order. The VME bus backplane is used only for control.

The AD250 is intended to be used with a wideband digital filter, digital tuner, or other high speed digital signal processor as part of a multiple board DSP system. Custom versions of the AD250 are available with different sample rates and filter cutoff frequencies. For system applications where external bandlimiting is provided, the onboard antialiasing filter can be bypassed. The user may also choose between AC and DC input signal coupling or input disconnection.

#### APPLICATIONS

- HF Communications Receivers
- Instrumentation Receivers
- Spread Spectrum Signal Processors
- Wideband Data Acquisition
- Signal Processor Front End

## TECHNICAL DESCRIPTION

Analog HF signals are input through a front panel mounted BNC connector to a preamplifier that terminates the input in a 50 Ohm load and provides overload protection for subsequent stages. The output of the preamplifier is processed by a two stage preselector with interspersed variable gain amplifiers. The preselector is configured as a set of second order lowpass filters followed by a similar set of highpass filters that allow the user to construct a set of fairly broad bandpass filters to control out-of-band interference that would otherwise diminish dynamic range. The variable gain amplifiers provide up to 80 dB of gain variation to support high level signals from other systems or for direct connection to an antenna. The output of the second variable gain amplifier is processed by an 11.5 MHz sharp cutoff antialiasing filter. A twelve bit analog to digital converter is used to digitize the conditioned HF signal at a sample rate of 25 Megasamples per second using an onboard crystal oscillator or an external source. The user may also add one or two additional oscillators to provide selectable sample rates.

### INPUT CHARACTERISTICS

- Impedance: 50 Ohms, Single Ended
- Coupling: DC or AC (100 Hz Cutoff) or Disconnect
- Sensitivity: 2 mV to 3 V p-p

### PRESELECTOR LOWPASS SELECTIONS

- 1 MHz
- 3 MHz
- 5 MHz
- Bypass

### PRESELECTOR HIGHPASS SELECTIONS

- 2 MHz
- 4 MHz
- 7 MHz
- Bypass

### ANTIALIAS FILTER

- 11.75 MHz Equiripple Lowpass Bypass

### A/D CONVERTER PERFORMANCE

- Resolution: 12 Bits
- Conversion Speed: 25 MSPS or User Supplied Internal or External Source
- Analog Bandwidth: 150 MHz
- Harmonic Distortion: < 74 dBc
- Intermodulation Distortion: < 77 dBc
- Signal to Noise Ratio: > 64 dB

### OUTPUT CHARACTERISTICS

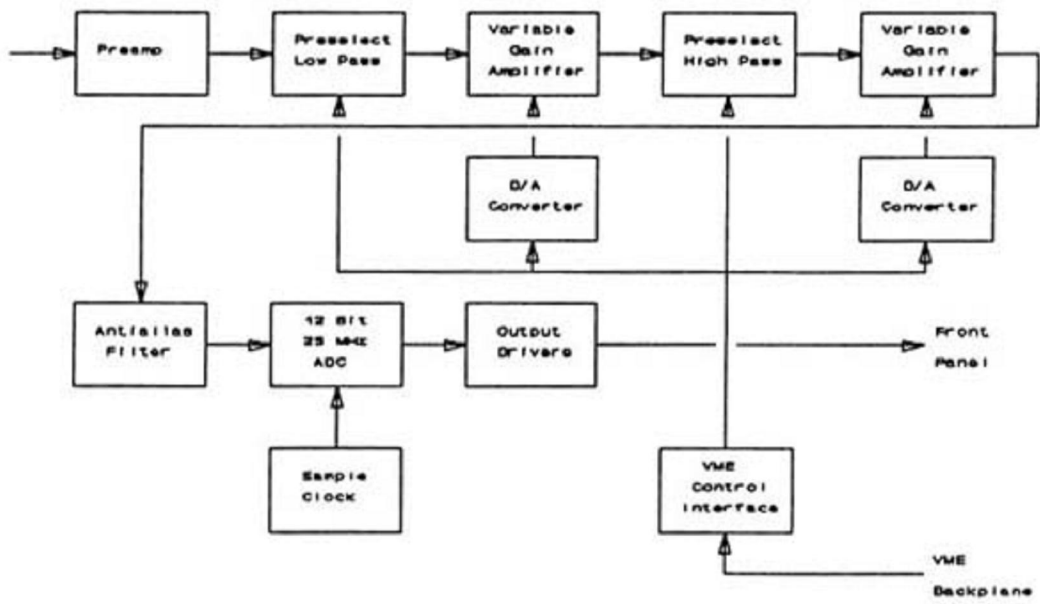
- Data: 12 bit Differential ECL, or Single Ended TTL, Two's Complement
- Clock: Differential ECL or TTL

### SIGNAL PROCESSING BANDWIDTH

- 12.5 MHz

### PHYSICAL CHARACTERISTICS

- Single Height 6U VME Form Factor



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