MISTRAS

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PRODUCTS & SYSTEMS DIVISION | PRODUCT BULLETIN

AD-IPR-1210

Integrated Analog to Digital Converter with Pulser/Receiver

HIGH SPEED PCI-PC COMPUTER BASED CARD

The AD-IPR-1210 is a critical hardware component of MISTRAS, Group Inc.'s UT and C-Scan systems. The AD-IPR-1210 is available either as an integrated unit or as a standalone (analog-to-digital only) board. When used as a standalone, it can be used with other (internal or external) pulser/receiver options, making it one of the most versatile options on the market today. The board (with or without the integrated IPR option) has a host of potential functions:

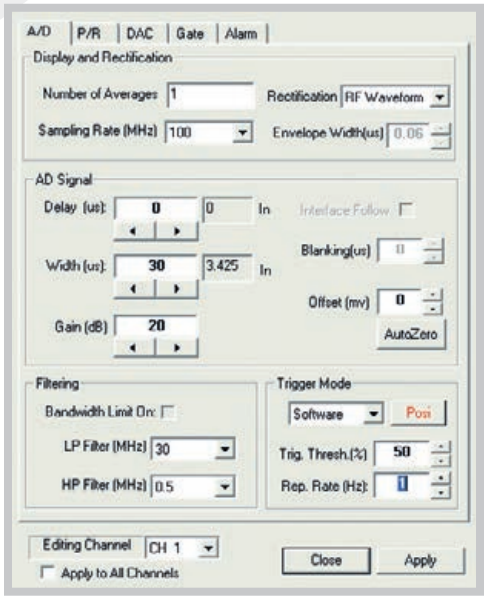
- Industrial
- Commercial
- Medical
- Scientific research & development
- Instruments
- General laboratory work
- -20 to +80 dB gain in 0.1 dB steps

The AD-IPR-1210 board is a 12-bit, analog-to-digital converter with an integrated, high-performance 400 Volt pulser/receiver module. Utilizing a 10-layer SMT (Surface Mount Technology) printed circuit board, this high-speed, extremely low-noise PCI-bus card is designed for wide bandwidths and fits into one standard PCI slot on a PC. With a tunable (50 nanoseconds to over 1 microsecond), programmable pulse width, the pulser/receiver can be optimized to work with 20 MHz to less than 500 kHz transducers.

For a detailed description of the AD-1210-PCI portion of the system, please refer to the separate AD-1210-PCI Product Bulletin.

SOFTWARE APPLICATIONS

The AD-IPR-1210 has been fully integrated with the latest software applications. The converter incorporates ULTRAPAC™ and LSI ultrasonic inspection systems using UTWin™ software. Users are also given the ability to program their own applications with the AD-IPR-1210 thanks to optional Windows and LabView driver software. This gives an AD-IPR-1210 user the freedom to customize the converter's high-powered capabilities to fit an individual need or function.



UTwin™ A-D Menu

UPGRADE

An existing standalone AD-1210-PCI to the AD-IPR-1210 configuration is performed as a factory option.

KEY FEATURES

Overall:

- Available as integrated unit or standalone
- High-speed, but extremely low noise
- Designed for wide bandwidths
- Fits into one standard PCI slot
- Programmable pulse width

UT Receiver:

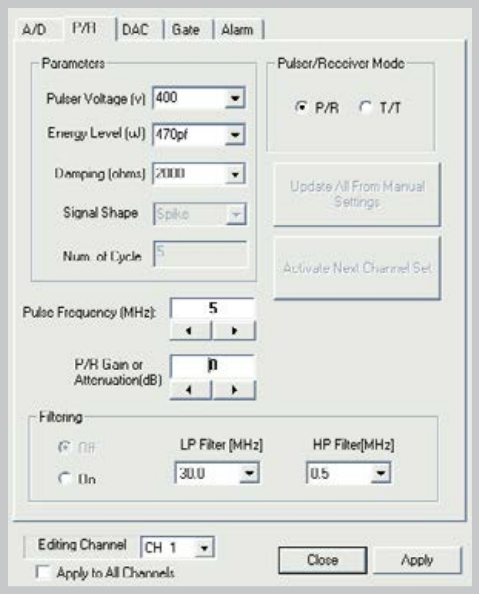
- 20 MHz bandwidth
- -20 to +80 dB gain in 0.1 dB steps
- 6 Selectable high pass filters at 0.5, 2.0, 4.0, 8.0, 12.5 and 22.5 MHz
- 6 Selectable low pass filters at 2.0, 5.0, 7.5, 12.5, 17.5 and 20 MHz
- Distance Amplitude Correction

UT Turnable Spike Pulser:

- Programmable voltage level: 10 volt steps
- 400 Volt (<5 nsec rise time) pulser
- Programmable (tunable) pulse width
- Programmable damping values - 4 levels
- Programmable energy levels - 2 levels
- Up to 10,000 pulses per second usable rate

REAL TIME FEATURES:

- Time from trigger to interface (first echo) detection
- Time to maximum peak in gate
- Time to first peak in gate
- Time to threshold before first peak in gate
- Time to threshold before maximum peak in gate
- Peak amplitude in gate
- Amplitude of first peak in gate
- Amplitude Voltage Resolution: 12-bit 12- bit (488 µV)
- Time of Flight Resolution: 16-bit (10 nsec)



UTwin™ P/R Pulser

Additional AD-IPR-1210 Performance Specifications Physical and Electrical:

- **Card Form Factor:** ..... Full size and length PCI bus board
- **Dimensions:** ..... 4.2" (10.67 cm) H x 13.5" (34.3 cm) L x 0.6" (1.53 cm) W
- **Weight:** ..... < 1 lb (<0.5Kg)
- **Power Requirements:** ..... < 12 watts, +5V 1.5A, +12V 0.3A
- **Electrical Safety Stds:** EN60950 (IEC-950)
- **EMC Emission Stds:** EN55011, EN55022
- **EMC Immunity Stds:** EN50082-1, IEC-1000-4-2,3,4
- **Operating Temp:** ..... 41 - 110ºF (5 - 45ºC)

UT Receiver

- **Input Impedance:** ..... 200 ohm
- **Maximum Input Voltage Range:** ..... +/- 1 volt
- **Output Impedance:** ..... 50 ohm
- **Bandwidth:** ..... 0.5 MHz - 20 MHz (+ 3dB)

Analog to Digital Converter

- **Resolution:** ..... 12 bits
- **Offset Control:** ..... Programmable with 12 bit DAC
- **Sample Rates:** ..... 100, 50, 25, 10, 5 M-Samples/sec
- **Sample Memory:** ..... 1 Mb Synchronous Static RAM (SSRAM)
- **Max Waveform Sample Size:** ..... 512 k samples.

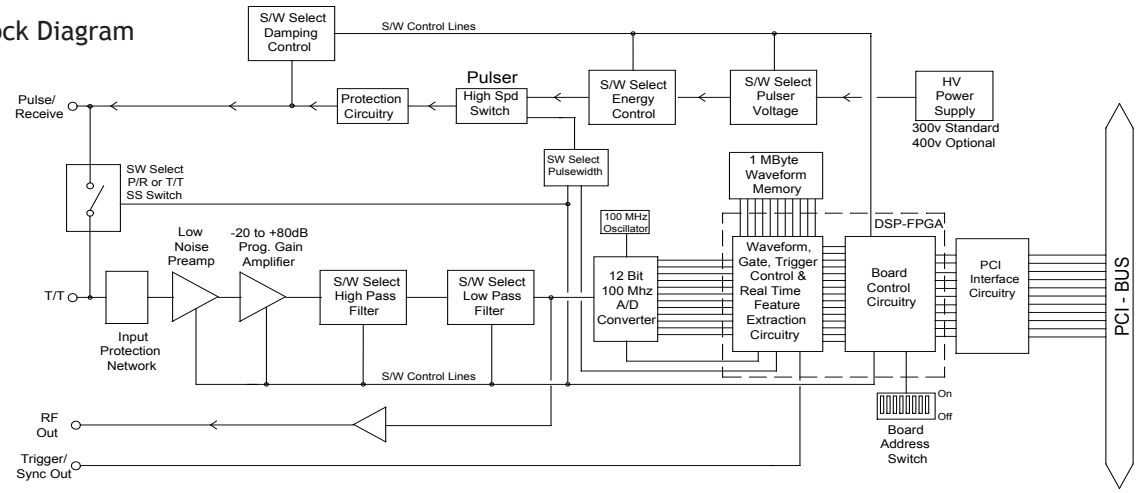
Distance Amplitude Correction

- **Memory:** ..... 128 kbytes RAM for 64 K points
- **Resolution:** ..... 0.1 dB
- **Duration:** ..... 0 - 1.28 msec

Trigger, Gates & Features

- **Trigger Modes:** ..... Software Controlled, External Input, Signal Threshold
- **Threshold Control:** ..... Programmable 1 - 100% Full Scale
- **Post Trigger/Delay:** ..... Programmable 0 - 262,140 samples (0 - 2,620 µsec)
- **Gates:** ..... 4 independent gates (with separate Gate Delay, width controls, sync threshold and detection threshold)
- **Blanking:** ..... 10 to 2,621,400 nsec (18 bit counter) or 152" in water
- **Gate Delay:** ..... 10 to 655,350 nsec (16 bit counter) or 160" in Al
- **Gate Width:** ..... 10 to 655,350 nsec (16 bit counter) or 160" in Al
- **Feature Extraction:** ..... Real time feature extraction using full wave, positive or negative signal

AD-IPR-1210 Block Diagram



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