



## FEATURES

- One-Board Design: pulser/receiver and A/D converter on a single PCI board
- 32-bit PCI bus for an ultra-fast data transfer rate
- On-board microprocessor for various custom applications
- On-board encoder counters featuring optional position based data acquisition
- Time stamps, XY positions, and I/O status for each A-scan
- 256-channel automatic timing and switching capability when coupled with DT16B
- Distance amplitude correction (DAC) for all 256 channels (optional)
- Up to 100MSPS high-speed A/D conversions with 9-bit resolution
- Optional logarithmic amplifier
- FIFO memory for storing multiple A-scans—up to 256 kilo samples
- Pulser switch-off during data acquisition for low noise operation
- Wide-range dynamic gain
- Adjustable DC offset
- Oscilloscope software for Windows 95/98/2000/NT included
- Windows 95/98/2000/NT software development kits for C/C++, Visual BASIC, and LabView

## DESCRIPTION

The PCIUT3100 ultrasonic testing board is a combination pulser/receiver and high-speed analog to digital converter on a single PCI board. The board generates an electrical pulse which is transmitted to an ultrasonic transducer. The transducer converts the electrical excitation pulse to an ultrasonic pulse which then propagates into the test material or couplant. The transducer also receives the echoes that are reflected back from the interface and converts the ultrasonic pulse back into an electrical signal which is then processed by the on-board receiver and analog to digital converter. This process is entirely adjustable by the end user—configurable properties include: pulse voltage, pulse width, damping, pulse/echo or through transmission mode, receiver gain, DC offset, low-pass filter, high-pass filter, rectification, sampling rate, trigger source—internal or external, and trigger delay.

Optional add-ons include digital inputs and outputs, an external clock input, a sync output, memory updates, an on-board hardware key module, a logarithmic amplifier, distance amplitude correction (DAC), up to two additional 14-bit analog to digital converters, and software development kits.

When used in conjunction with our DT16B 16-channel pulser/receiver switching board, the PCIUT3100 becomes a multi-channel ultrasonic inspection and analysis system capable of up to 256 channels. Multiple PCIUT3100 boards can also be installed in one computer to develop a multi-channel ultrasonic system capable of firing multiple transducers and acquiring data at the same time.

## SPECIFICATIONS

<p><b>Pulse Voltage</b> -40V to -300V, 256 steps. Higher voltages are available upon request.</p> <p><b>Pulse Width</b> 50 ns to 484ns, 256 steps Optional 15 ns is available upon request.</p> <p><b>Damping</b> 620Ω, 340Ω, 200Ω, 160Ω, 60Ω, 55Ω, 50Ω, or 47Ω</p> <p><b>Internal Trigger</b> 10 Hz to 5000 Hz in 10 Hz increments when internal trigger is selected.</p> <p><b>Receiver Gain</b> 0 dB to 80 dB in 0.1dB increments.</p> <p><b>DC Offset</b> -2.5V to +2.5V in 5mV increments</p> <p><b>Low Pass Filter</b> All, 48MHz, 28MHz, 18MHz, 8.8MHz, 7.5MHz, 6.7MHz, or 5.9MHz</p> <p><b>High Pass Filter</b> 4.8MHz, 1.8MHz, 0.8MHz, or 0.6MHz</p> <p><b>Waveform</b> Full rectify, + half rectify, - half rectify, or RF</p> <p><b>Sampling Rate</b> 100MHz, 50MHz, 25MHz, 12.5MHz, 6.25MHz, 3.125MHz, 1.5725MHz, and external clock &lt; 100MHz</p> <p><b>Transducer Mode</b> Single (Pulse/Echo) or dual (through transmission)</p>	<p><b>Resolution</b> 8 bits (0 to 255) or 9 bits (0 to 511)</p> <p><b>Memory</b> 16 kilo samples and 256 kilo samples</p> <p><b>Waveform Length</b> 16 to 16382 in 4 sample steps</p> <p><b>Trigger Source</b> external, internal or software</p> <p><b>Connectors</b> 2 BNC connectors (2 LEMO 00 connectors for the board without encoder options): Pulse out, and receiver in</p> <p><b>Post Trigger delay</b> 2 to 32764 samples in 2 sample steps</p> <p><b>Dimensions</b> 12.5"x4.25" not including BNC and PCI edge connectors</p> <p><b>Add-on Options</b></p> <ul style="list-style-type: none"> <li>- BNC (LEMO 00) external clock connector</li> <li>- BNC (LEMO 00) trigger sync output connector</li> <li>- Logarithmic amplifier</li> <li>- Distance amplitude correction</li> <li>- Up to 4 encoder counters and connectors</li> <li>- Two additional 14-bit A/D converters</li> <li>- 256K sample memory upgrade</li> <li>- Windows software development kits</li> <li>- Hardware security key module</li> <li>- Hardware key development kit</li> <li>- Multi-channel control option</li> </ul>
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## Scope Window with DAC

