PCI Compatible • 50 MHz Receiver Bandwidth • Transmit/Receive and Through Modes

# PRC50 Pulser-Receiver

*Low-Noise Ultrasonic Pulser-Receiver on a PCI Format Card*



The PRC50 is a versatile single-channel Pulser-Receiver on a half-length PCI card. It is ideal for use in PC-based ultrasonic testing and inspection systems, and its small size and low power consumption enable systems to be implemented using portable computers. The PRC50 is provided with turnkey control software for Windows. A Software Development Kit and Programmer's Manual are provided for the development of custom applications.

Seven energy levels and a variable power supply allow for precise adjustment of the PRC50's transducer excitation pulse. The Pulser has eight damping levels to enable fine adjustment of the transducer performance. The PRC50 Pulser synchronizes easily to other system hardware by producing or accepting trigger pulses on the PRC50 Trig/Sync connector.

The wide-bandwidth low-noise PRC50 receiver has inputs for T/R (Transmit-Receive) and Through transducer signals. The receiver can amplify either input signal while maintaining excellent isolation from the other signal. In addition, the PRC50 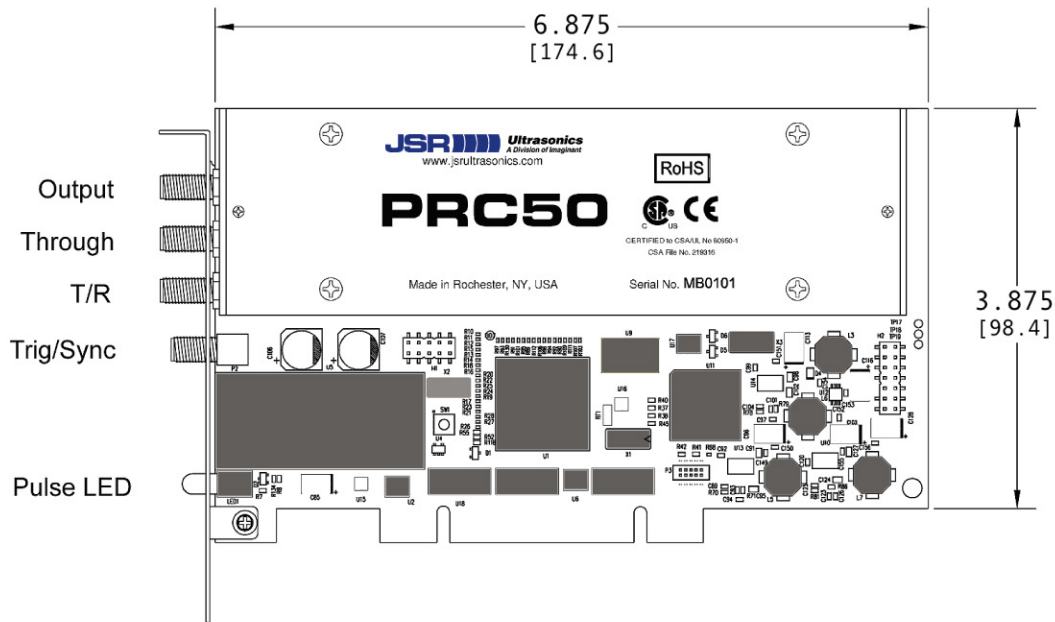receiver can independently amplify both input signals, and output the sum of the amplified signals. Following amplification, the receiver output signal passes through selectable High-Pass and Low-Pass filters. The output signal is then provided on the PRC50 Output connector.

The PRC50 can be combined with A/D Boards or other signal detection and processing instrumentation, which gives system integrators the flexibility to optimize system cost and performance. Connections are easily made between the PRC50 and other hardware using 50Ω coaxial cables. The four interface connectors on the PRC50 are SMA female coaxial connectors.

The full-featured PRC50 is an excellent choice for PC-based ultrasonic system applications including flaw detection, quality assurance, material characterization, transducer testing, and time of flight measurements.

**JSR Ultrasonics**
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# PRC50 Pulser-Receiver Specifications



Output
Through
T/R
Trig/Sync
Pulse LED

6.875 [174.6]

3.875 [98.4]

## Pulser

| | |
|---|---|
| Pulse Type | Negative spike pulse on T/R Connector |
| Pulser Supply Voltage | Adjustable 100V to 475V |
| Initial Transition | 6ns typical (10–90% Fall Time) |
| Pulse Amplitude | -180V into 50$\Omega$ typical. Amplitude varies with Energy and Damping control settings, and load impedance |
| Pulse Duration | 25–150ns FWHM typical with 50$\Omega$ external load. Pulse duration varies with the Energy and Damping control settings |
| Damping | Eight discrete damping values; 28, 31, 36, 42, 50, 63, 85 and 128$\Omega$ |
| Internal Triggering | 100 Hz – 5 kHz trigger rate<br>Synchronization pulse appears on Trig/Sync Connector. Sync Pulse + 5Vmax into 50$\Omega$ load, 20ns max risetime, 200 ns width typical • Rising edge of sync pulse is synchronous with the initial pulse transition on T/R connector |
| External Triggering | 0 Hz – 5 kHz trigger rate<br>Trigger Pulse applied to Trig/Sync Connector • Trig/Sync input impedance is selectable as either 50$\Omega$ or 10k$\Omega$ • Triggering may be selected to occur on either the rising or falling edge of the trigger pulse |

## Environmental Operating Conditions

| | |
|---|---|
| Temperature | 0 to 45ºC |
| Humidity | 0 to 80% RH non-condensing |

## Receiver

| | |
|---|---|
| Gain | -14 to +60 dB noninverting |
| Input Modes | T/R, Through or 'Both' Receiver Modes |
| Through Trans. Isolation | 60 dB typical between Through and T/R receiver paths at 10 MHz |
| Input Impedance | Through Input Connector: 128$\Omega$<br>T/R Input Connector: Impedance varies with Damping Value |
| Bandwidth | 0.3 to 50 MHz minimum (-3 dB) |
| High Pass Filter | 0.3, 1.0, 5.0 or 12.5 MHz |
| Low Pass Filter | 7.5, 15, 25 or 50 MHz |
| Noise | Typically 145$\mu V_{p-p}$ input referred (measured at 60 dB gain, 50 MHz – 3 dB BW) |
| Output Impedance | 50$\Omega$ |
| Output Voltage | ± 1V into 50$\Omega$ |

## PC or Compatible Control Computer

| | |
|---|---|
| Interface | PCI bus |
| Software | Turnkey software for Windows 2000 and Windows XP Software Developers Kit provided |

## Miscellaneous

| | |
|---|---|
| Power | 7.5 W maximum. |
| Dimensions | 3.875" H by 6.875" W (98.4 x 174.6mm), not including SMA and PCI edge connectors |
| Weight | 0.63 lbs (0. 29 Kg) |

Note: Specifications are typical at 25ºC
Specifications subject to change without notice.