



MULTI-PURPOSE LASER RECEIVER

Laser
Ultrasonics

EXAMPLES OF APPLICATIONS

On-line inspection

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Quality control

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Thickness measurement

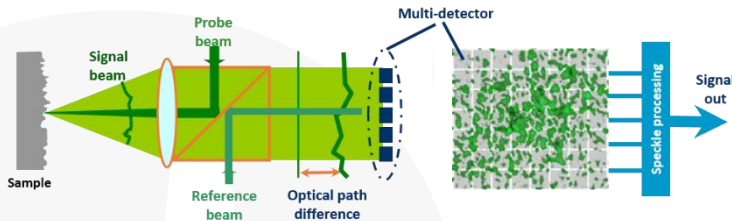
If the sonic velocity of the material is known, it is possible to measure the thickness of the specimen. Using a pulse-echo configuration (detection and generation on same side and superimposed), with the velocity of sound c and the time t between two peaks, the distance d in the material can be calculated.

TECHNOLOGY

The **Multi-Purpose Laser Receiver** was born from a research and development grant from NASA and the National Science Foundation.



The receiver combines the advantages of homodyne interferometry and multi-detector ability. The beam reflected by the sample rough surface has many speckles. The signal multi-speckled beam is combined with the reference beam and focused on 50 photo-detectors. Each detector collects a few speckle and delivers an homodyne signal.












Each homodyne signal is processed in parallel using a patented signal processing architecture, based on "random quadrature" demodulation scheme taking advantage of the random phase distribution inherent to speckle light. The detectors produce a time-varying analog voltage that is proportional to the rectified instantaneous surface displacement at ultrasonic frequencies.

FEATURES

- > Not dependent of the laser wavelength: from visible to IR
- > Fiberized
- > Inspection on rapidly moving object
- > High sensitivity on all surface types and materials
- > Continuous, modulated or long pulse detection laser

SPECIFICATIONS

 <p>Technology Multi Channel Random Quadrature</p>	 <p>Detection Out-Of-Plane</p>	 <p>Configuration Optical Fiber</p>
 <p>Internal Laser power Up to 3W All Wavelength</p>	 <p>NESD (out-of-plane motion) $1.10 \frac{nm}{\sqrt{Hz}}$</p>	 <p>Detection bandwidth Up to 100MHz</p>
 <p>Dimensions 381 x 381 x 152 mm³</p>	 <p>Weight 15kg</p>	 <p>Electrical requirements 110V / 220V 50Hz / 60Hz</p>