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

Each homodyne signal is processed in parallel using a patented signal processing architecture. The signal processing is based on a “random quadrature” demodulation scheme which takes 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.

**APPLICATIONS**

**On-line inspection and Quality Control**

When propagating through a specimen, the ultrasonic waves carry information about the inner structure. Similarly, when propagating along a surface, the information about the surface quality and surface coatings can be extracted.

**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.

**SPECIFICATIONS**

- Can be fitted with lasers ranging 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