Elastic Modulus Measuring Device

(UMS-H／R)

- **Parameters including young's modulus and the poisson ratio are measured at the same time.**
- **Easy connection to PC via USB**
- **Ultrasonic flaw detection available with standard pulser/ receiver equipped.**

Elastic modulus is physical property value that shows resistant to deform, which is the ratio of stress and strain generated when external force is given to a elastic body. Elastic modulus includes young's modulus, poisson ration, rigidity modulus, bulk modulus and others.

These can be calculated with difference of longitudinal and horizontal wave velocity (density and thickness required). Probes required for both longitudinal and horizontal wave measurement.

Property values unique to each material are calculated by measuring reflection time when ultrasonic wave is transmitted into a test piece. With a flat space to attach the probe, not only a test piece but also a product can be measured. Measurement values are longitudinal wave velocity, horizontal wave velocity, young's modulus, rigid modulus, bulk modulus, compressive elastic modulus, poisson ratio, lamé parameters, anisotropy of the sound velocity, Debye temperature and others.

Tips for how to use

Click to designate the 1st and 2nd bottom echo of a workpiece for both longitudinal and horizontal wave, then obtain each ultrasonic velocity respectively, and finally various elastic modulus are automatically calculated of which values are listed below area.

* USM-H： for High temperature ／USM-R; for Room temperature
Special options including heating furnace are needed for high temperature measurement.
* Refer to reverse page for specifications of Standard Pulser/Receiver.
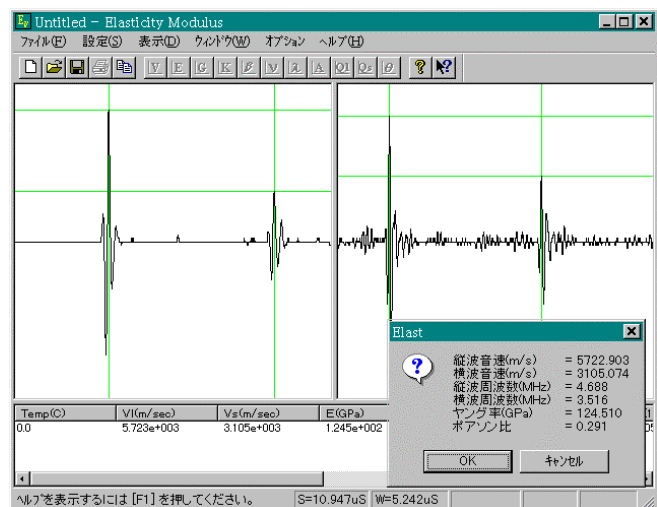
Ultrasonic Pulser-Receiver, Material Surface Sound Diagnosis Device

Ultrasonic Pulser-Receiver GNES-1001 comes with the software for Material Surface Sound Diagnosis

Utilizing SH wave pulse which is generated in parallel with the surface, property change near surface layer of the material is measured and analyzed non-destructively. Making calibration curve of the amount of surface material change of metal/ceramic/polymer and others together with specific waveform parameters, evaluation of material property can be done, such as hardness, fatigue, membrane thickness, deterioration, crack and others.
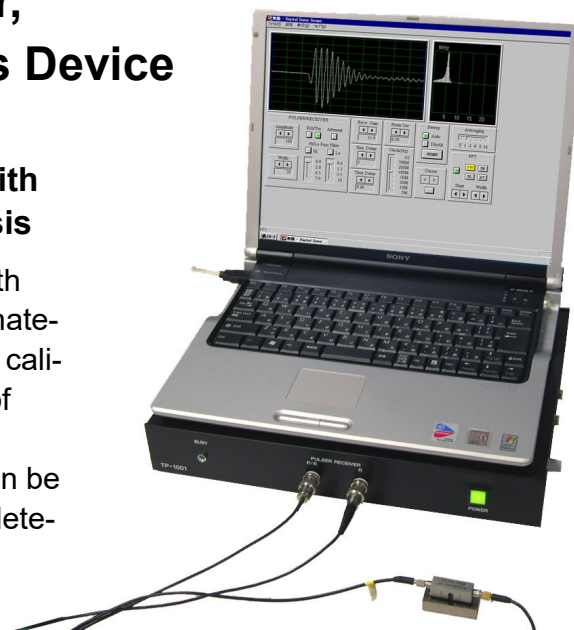
Bundled Software
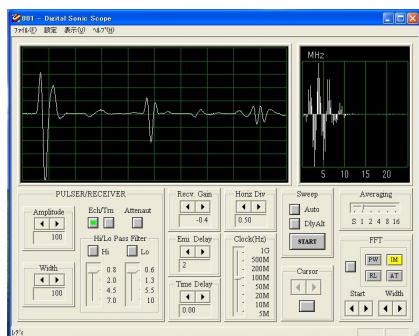
Using opposed SH wave probes, measure a standard test piece of the target material and save waveform (transmission time).
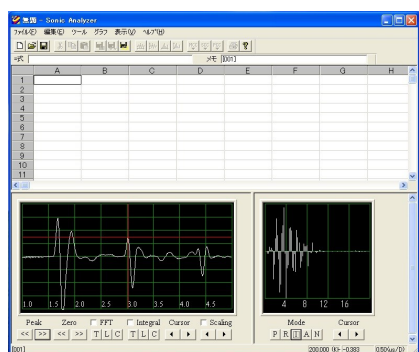
Measure and save waveform (transmission time) of a workpiece of material change to compare the difference from the standard test piece

Elastic Modulus Measuring Device is equipped with Pulser/Receiver having the software of Material Surface Sound Diagnosis.

Specifications of Pulser/Receiver (GNES-1001)

Pulser	
Pulse Voltage	0～600V（10Vstep）
Pulse Type	Negative Square Pulse
Pulse Width	20ns～500ns（3ns step）
Modes	Echo Through Transmission
Damping	Off,50,100,200,500,1KΩ
Receiver	
Input Impedance	10KΩ
Output Impedance	50Ω
Gain	－5～－55dB(0.3dB step)
Bandwidth	300Hz～20MHz(±3dB)
High Pass Filter	0.8M,2.0M,4.5M,7.0MH,OFF
Low Pass Filter	0.6M,1.3M,5.5M,10MHz,OFF
Attenuation	0,-20dB
A/D Converter	
Resolution	10bits
Bandwidth	～50MHz(－3dB)
Sampling Rate	100M,50M,20M,10M,5M,2M,1M,0.5MHz/s
Input Impedance	50Ω
Coupling	DC
System	
Output Connector	BNC
Input Connector	BNC
Control	Controlled by PC via USB (except for damping register)
Dimension	330mm(W)×260mm(D)×49mm(H)
Weight	2.5kg
Power supply	100V～240V AC

＊ Specifications are subject to change without notice. Contact us for details of optional PC.