

ECHOMETER

BOLT LOAD
MEASUREMENT



The Echometer ultrasonically measures the elongation, stress, and load in fasteners, quickly and accurately, and displays the result on an easy to read screen. The measurement is achieved by determining the change in the transit time of any ultrasonic shock wave along the length of the fastener as the fastener is tightened.

The unit works with all bolt-tightening systems and is used to monitor the fastener during the tightening process to ensure accurate initial loading. The retained load in the fastener can then be monitored at any time.

Echometer minimizes the requirement for extensive operator training. With built in data recording and reporting through a RS232 interface, the Echometer is quick and easy to use and offers a reliable solution to the most difficult bolting problem.

EASY
OPERATION

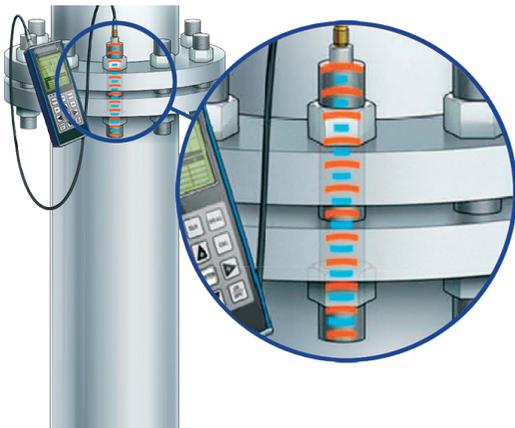
**COMPACT &
DURABLE**

COST
EFFECTIVE

**RECORDS
& REPORTS**

**EASY MEASURING &
MONITORING**

MEASURES
Elongation
Load Stress
Strain



ECHOMETER

SPECIFICATIONS

SIZE		Pressure Gauge	Dual Scale 0 - 30,000 psi (0 - 2000 bar)
Width	2.5 inches (63.5 mm)	Working Pressure	21,750 psi (1500 bar)
Height	6.5 inches (165 mm)	Operating Temperature	14 ° F to 140 ° F (-10 ° C to 60 ° C)
Depth	1.25 inches (31.5 mm)	Case	Extruded aluminum body with nickel-plated aluminum end caps (gasket sealed)
Weight	0.9 lbs. (0.4 kg) (with batteries)	Data Output	Bi-directional RS232 serial port, Windows PC interface software.
Keyboard	Membrane switch pad with 12 tactile keys.		

ULTRASONIC SPECIFICATION MEASUREMENT

Models	Pulse-Echo (Standard) Pulse-Echo with Gate (fine adjust)	Power Source	Three 1.5V alkaline or 1.2V NiCad AA cells. Typically operates for 150 hours on alkaline and 100 hours on NiCad. Auto power off if idle for 5 minutes. Battery status icon.
Pulsar	Square wave pulsar with adjustable pulse width (spike, thin & wide)		
Receiver	Manual or Auto set gain control with 400DB range.		

TRANSDUCER

Transducer Types	Single-element - 1 to 10 MHz & 1/8" (3.175 mm) to 1" (25.4 mm) diameters Locking quick disconnect '00' LEMO connectors Standard 10' cable	Custom transducers and cable lengths available upon request Temperature probe for automatic temperature compensation
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MEASURING

Range	From 1 inch to 96 inches (25.4 mm to 2,435 mm) length bolt	Display	A-scan: Rectified +/- (half wave view) or RF (full wave form view)
Time	Nanoseconds	Limits Bar (alarm units)	Set Hi & Lo alarm units for displaying an acceptable tolerance range. Repeatability bar graph - bar graph indicates stability of measurements.
Elongation	Change the length (inches/mm)	Data Logger (internal)	Total 8,000 readings, multiple bolt groups, stores both waveform views, nanoseconds, elongation, load, stress, and strain for each reading.
Load	Force load applied (lbs. kip or kilo newtons)	Alarm Limits	Set Hi & Lo tolerances with audible beeper, viewable scan bar, and visual LEDs.
Stress	Force per unit area stress (psi or MPa)		
Strain	Percentage strain applied		
Resolution	+/- 0.00001 inch (+/- 0.0001 mm)		
Velocity Range	0.0492 to 0.3937 in./ms (1250 - 9999 meters/sec) Fixed, single, and two port zero calibration options Select bolt material from preset custom list		