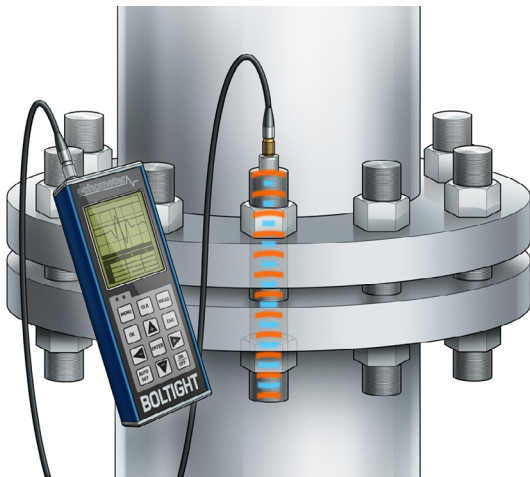


ULTRASONIC BOLT LOAD MEASUREMENT

The echometer range of products ultrasonically measures the elongation, stress and load in fasteners.

Measurement is achieved by determining the change in the transit time of an ultrasonic shock wave along the length of the fastener as the fastener is tightened.



The echometer units work with all bolt tightening systems and are 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.

With built in data recording and reporting through a RS232 interface, it is quick and easy to use and offers a reliable solution to the most difficult bolting problems.



The echometer+ delivers more features and performance than the echometer with 9 different pulse width options to select from, this gives the operator more control over how the waveform is transmitted. A correlation feature ensures accurate and repeatable transducer placement, which is invaluable when an operator is finding it difficult to get a reading.

The echometer and echometer+ are fully compatible with each other including data transfer and ancilliary equipment.

Available ex-stock for immediate delivery.



TECHNICAL & DIMENSIONAL DATA

SPECIFICATION		
Measuring Range	From 25.4mm to 2453mm length bolts	Bolts from 25.4mm to 25.40mm length bolts
Weight	0.4kg (with batteries)	2.04kg (with batteries)
Size	63.5mm x 165mm x 31.5mm	16mm x 165mm x 70mm
Operating temperature	-10°C - 60°C	-10°C - 60°C
Keyboard	Membrane switch pad with 12 tactile keys	Membrane switch pad with 21 tactile keys
Power Source	3 x 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.	Lithium Ion Pack 10.8V, 2 amp hrs typical operation 18 hrs. Emergency battery backup. 6 x 1.5V alkaline, 1.2V AA NI-MH or other equivalent power source. Battery life continuous use Alkaline 12 hrs, NiCad 5 hrs and NI-MH 12 hrs with default settings
Memory	16 megabit non volatile RAM	4 Gb internal & up to 64 Gb external SD Slot.
Velocity Range:	1250-9999 meters/second	1250-13995 meters/second
Calibration	Automatic, fixed, single or two point zero calibration options.	Automatic, fixed, single or two point zero calibration options.

FEATURES

- Ability to change length to inches or millimetres
- Force load applied in pounds kip or kilo newtons
- Stress force per unit area in psi or MPa
- Select bolt material from a preset or a custom list
- Direct USB connectivity, bi-directional RS232 PC serial interface.
- Two LEMO 00 transducer connectors.
- Meets IP65 requirements

TRANSDUCER DATA & SELECTION

There are several things to consider when deciding which transducer to use:

- The crystal diameter should be completely in contact with the bolt end surface
- The outside diameter should be clear of any obstruction
- The frequency should be chosen to suit the bolt length
- The larger the diameter the stronger the signal and therefore better results are obtained by using the largest size transducer that will fit on the bolt
- Boltight recommends the 3/8" diameter, 5MHz transducer as the best general purpose covering 90% or more of typical bolting applications

SIZE	FREQUENCY	APPLICATION
1/8" (3.1mm) diameter	5 Mhz	General Purpose
1/8" (3.1mm) diameter	10 Mhz	Hi-resolution/short Bolts
1/4" (6.3mm) diameter	2.25 Mhz	Long Bolts
1/4" (6.3mm) diameter	5 Mhz	General Purpose
1/4" (6.3mm) diameter	10 Mhz	Hi-resolution/Short Bolts
3/8" (9.5mm) diameter	2.25 Mhz	Long Bolts
3/8" (9.5mm) diameter	5 Mhz	General Purpose
1/2" (12.7mm) diameter	2.25 Mhzs	Long Bolts
1/2" (12.7mm) diameter	5 Mhz	General Purpose
3/4" (19.0mm) diameter	2.25 Mhz	Long Bolts
3/4" (19.0mm) diameter	5 Mhz	General Purpose

MAGNETIC TRANSDUCERS

DIAMETER REFERENCE	OUTSIDE DIAMETER	WEARFACE DIAMETER	CRYSTAL DIAMETER
1/8" (3.1mm)	.38" (9.6MM)	0.2" (5.0mm)	1/8" (3.1mm)
1/4" (6.3mm)	0.75" (19.0mm)	0.32" (8.1mm)	1/4" (6.3mm)
3/8" (9.5mm)	0.81" (20.5mm)	0.47" (11.9mm)	1/4" (6.3mm)
1/2" (12.7mm)	1" (25.4mm)	0.63" (16.0mm)	1/2" (12.7mm)
3/4" (19.0mm)	1.21" (30.7mm)	0.82" (20.8mm)	3/4" (19.0mm)

NON MAGNETIC TRANSDUCERS

1/8" (3.1mm)	0.23" (5.8mm)	1/8" (3.1mm)
1/4" (6.3mm)	0.355" (9.0mm)	1/4" (6.3mm)
1/2" (12.7mm)	0.605" (15.3mm)	1/2" (12.7mm)



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