

HYDRAULIC BOLT TENSIONING

BOLTIGHT® echometer+

Ultrasonic Bolt Load Measurement

The Echometer+ delivers more features and performance than the original handheld Echometer. Quick and simple to operate, it can accurately measure elongation, load, stress and strain on bolts up to 25.40m in length.

The device has nine different pulse width options to select from. This gives the operator more control over how a waveform is transmitted. A new automatic correlation feature ensures accurate and repeatable transducer placement. This is invaluable when an operator is finding it difficult to get a reading, perhaps when there are unusual bolt materials involved.

Echometer+ works with all bolt tightening systems and is available ex-stock for immediate delivery. It is ideal for use inside a factory or laboratory environment where extra features would be more beneficial than overall portability.

Echometer+ is supplied in a strong plastic case with full operating instructions and a two-year warranty. Transducers and temperature sensors are interchangeable with the original Echometer. Training on how to use ultrasonic measurement competently is available on-site or at Boltight's UK training facilities.

Features:

- Ability to measure bolts 25.40m long
- Quantities - Elongation, Load, Stress, Strain and Time (nanoseconds)
- Automatic correlation ensures accurate and repeatable transducer placement
- Custom auto calibration
- Sunlight readable colour screen
- Built-in rechargeable batteries and 6AA emergency battery backup option
- 4GB internal SD card and a 64GB external SD card memory slot
- Data transfer to Windows PC or Apple computer via a USB 1.1 port
- Analog, serial & alarm outputs
- Fully compatible with original handheld Echometer including data transfer and ancillary equipment
- Supplied in strong plastic case
- Two-year warranty



Boltight Echometer+



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Ultrasonic Bolt Load Measurement

Specification

Physical

Weight: 2.04 kgs with batteries.
Size: 216mm x 165mm x 70mm
Operating Temperature: -10°C to 60°C
Keyboard: Membrane switch pad with 21 tactile keys.
Case: Strong plastic

Display Views: RF (full wave view), +/- Rectified (half wave view), Digits, or split screen combination (wave plus large digits).

Environmental: Meets IP65 requirements.

Connections

USB: Direct USB 1.1 PC connectivity.
Power Connector: 12v @ 2amps, adapter 100-240 VAC, 0.7 Amps, 50-60 Hz.
5 Pin Lemo (includes):
RS232 Output - RS232 PC serial interface.
Alarm Outputs - Two independent alarm outputs triggered by the gates.
Analog Out - Proportional outputs (amplitude or distance), 0-10 volts.
Transducer Connectors: Two LEMO 00 connectors.

Memory

Log Formats: Grid (Alpha Numeric).
Capacity: 4 Gb internal & up to 64 Gb External SD slot.
Screen Capture: Tagged interface file (.tif) capture for quick documentation.
Custom Setups: 64 user configurations.

Power Source

Lithium Ion Pack: 10.8v, 2 amp hrs, typical operation 18hrs.
Battery Backup: Emergency battery backup. Six 1.5V alkaline, 1.2V AA Nicad cells, 1.2V AA NI-MH, or other equivalent power source. Battery life (continuous use): Alkaline (12 hrs), Nicad (5hrs), and NI-MH (12hrs), with default settings

Electronics

Display: Blanview sunlight readable QVGA TFT color display (320 x 240 pixels). Viewable area 115.2 x 86.4 mm, or 144.78 mm diagonal. 16 color palette, multiple color options and variable brightness.

Screen Refresh Rate: 60Hz.

Timing: Precision TCXO timing with single shot 100 MHz 8 bit ultra low power digitizer.

Pulser Types: Spike, Square Wave & Tone Burst.

Pulser Voltage: 100 - 400v.

Pulse Width: Selectable step options Spike, Thin, Wide, HV Spike, HV Thin, HV Wide, TB .5MHz, TB 1MHz, TB 2MHz, TB 5MHz, TB 10 MHz. Spike 40 ns, Square Wave 80 to 400 ns, Tone Burst 50 ns to 1 microsecond.

Gain: 0 to 110dB with 0.2dB resolution. Manual and AGC control.

Damping: 50, 75, 100, 300, 600, & 1500 ohms.

Frequency Band: Broadband 1.8 - 19 MHz (-3dB) filter.

Horizontal Linearity: +/- 0.4% FSW.

Vertical Linearity: +/- 1% FSH.

Amplifier Linearity: +/- 1 dB.

Amplitude Measurement: 0 to 100% FSH, with 1% resolution.

Delay: 0 - 999.999in (25,400mm) at steel velocity.

Measurement Gates: Three independent gates depending on measurement mode selected, with audible and visual alarms. Amplitude 5-95%, 1% steps.

Features

Setups: 64 custom user defined setups; factory setups can also be edited by the user.

Auto Set: Automates the detection, scope, and display setting process for each individual bolt.

Gates: Three measurement gates, depending on measurement mode used, with adjustable start and threshold.

Alarm Limits: Adjustable Hi/LO tolerances with visual LED's and audible beeper. Hardware alarm outputs (accessory cable required).

Field Calibration: Vector or Regression correction curve for increased accuracy using Load & Stress.

Measuring

Units: English (in), Metric (mm), or Time (μ s)

Velocity: 0.0492 to .5510 in/ μ s (1250-13995 m/s).

Measurement Modes: Pulse-Echo (P-E), Echo-Echo (E-E), or Echo-Echo-Echo (E-EV).

Measurement Range: 1 to 999.999in (2540cm) in pulse-echo(P-E) measurement mode. Range will vary using multi-echo modes - dependent on material type and consistency.

Detection: Zero Crossing.

Resolution: +/- 0.00001 in (0.0001 mm).

Calibration: Automatic, Fixed, Single or Two- Point zero calibration options.

Quantities:

Time - Nanoseconds.

Elongation - Change in length (inches/millimeters).

Load - Force load applied (pounds KIP or megapascals MPa).

Stress - Force for unit area stress

applied (inches per inch/mm per mm).

%Strain - Ratio of elongation to

effective length.

Bolt Materials: Select types from a preset or custom list.

Transducers

Transducer types: Single element - 1 MHz to 10 MHz frequencies, and 1/8" to 1" diameters. Magnetic & Non Magnetic options available.

Glue-On: Available for short bolts with minimal/short elongations to eliminate transducer placement errors.

Connectors: Microdot, Lemo 00, or BNC options depending on the transducer model selected.

Custom Transducers: Available for special applications.

Certification

Factory calibration traceable to NIST & MILSTD-45662A.

Warranty

2 year limited.



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