DAKOTA ULTRASONICS

THE MINI-MAX v2.0
Bolt Tension Monitor

Ultrasonically measures the elongation produced by tightening a threaded fastener.

Highlights:
- Precision TCXO timing.
- Sunlight readable LCD display (240 x 160 pixels).
- Adjustable digitizer - Resolution.
- Pulse-Echo measurement mode.
- Temperature compensation.
- Quantities - Elongation, Load, Stress, Strain and Time (nanoseconds) to the loaded waveform.
- Auto Correlation - transducer placement.
- Auto Calibration.
- USB-C connectivity.
- 4GB internal SD memory.
- PC & OSX reporting software.
- 2 year warranty.
MINI-MAX SPECIFICATIONS

**Physical**
- **Weight:** 13.5 ounces (with batteries).
- **Size:** 2.5W x 6.5H x 1.24D in (63.5 x 165 x 31.5 mm).
- **Operating Temperature:** 14˚ to 140˚F (-10˚ to 60˚C).
- **Keyboard:** Membrane switch with twelve tactile keys.
- **Case:** Extruded aluminum body with nickel plated aluminum end caps (gasket sealed).
- **Environmental:** Meets IP65 requirements.

**Connections**
- **USB:** Direct USB-C 1.1 PC connectivity. Windows & OSX interface software.
- **Line Power:** USB-C to PC or AC adaptor.
- **Temperature Sensor:** 5 pin Lemo 1.
- **Transducer Connector:** Lemo 00.

**Memory**
- **Log Format:** Grid (Alpha Numeric).
- **Capacity:** 4GB internal SD memory.
- **Screen Capture:** Tagged interface file (.tif) capture for quick documentation.
- **Custom Setups:** 64 user configurations.

**Power Source**
- **Line Power:** USB to PC or power outlet.
- **Batteries:** Three AA cells. Alkaline 3 hrs, Nicad 10 hrs, Ni-MH 35 hrs. Auto power off after 5 minutes idle. Battery status icon.

**Transducers**
- **Transducer types:** Single element - 1 MHz to 10 MHz frequencies, and 1/8" to 1" diameters.
- **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.
- **Temperature probe:** Automatic temperature compensation.

**Electronics**
- **Display:** 1/8in VGA grayscale display (240 x 160 pixels); viewable area 2.4 x 1.8in (62 x 45.7 mm); EL backlight (on/off/auto invert).
- **Screen Refresh Rate:** 30 Hz.
- **Timing:** Precision TCXO timing with single shot 100 MHz 8 bit ultra low power digitizer.
- **Pulser Type:** Square Wave.
- **Pulser Voltage:** Selectable 100, 150 and 200 volts.
- **Pulse Width:**Selectable options Spike, Thin, and Wide. 80 to 400 ns.
- **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 - 999.9 in (25,400 mm) at steel velocity.
- **Measurement Gate:** One gate with audible and visual alarm. 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.
- **Alarm Limits:** Adjustable Hi/Low tolerances with visual LED’s and audible beeper.
- **Field Calibration:** Vector or Regression correction curve for increased accuracy using Load & Stress.

**Display Views**
- **A-Scan:** Rectified +/- (half wave view), or RF (full waveform view).
- **Large Digits:** Digital display only.
- **Alarm Limits Bar:** Hi & Lo alarm limits for displaying an acceptable tolerance range.

**Measuring**
- **Units:** English (in), Metric (mm), or Time (μs). Fahrenheit or Centigrade.
- **Velocity:** 0.0492 to .5510 in/μs (1250–13995 m/s).
- **Measurement Modes:** Pulse-Echo (P-E).
- **Measurement Range:** 1 in to 50 ft (25.4 mm to 15.24 M), dependent on material type and consistency.
- **Detection:** Zero Crossing.
- **Resolution:** +/- 0.0001 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 or millimeters per millimeter).**
  - **%Strain - Ratio of elongation to effective length.**
- **Bolt Materials:** Select types from a preset or custom list.
- **Repeatability Bar Graph:** Bar graph indicates stability of measurement.

**Certification**
Factory calibration traceable to NIST & MIL-STD-45662A.

**Warranty**
2 year limited

MADE IN THE USA

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