



DELTA SIGMA

BY RESONIC INSTRUMENTS

- **Easy to use** Touch Screen Display (Can be used with gloves or stylus)
- **Compatible** with MS Windows and MS Excel. No need for special PC Software
- **IP44** Rated (Sealed for field use)
- **Chargeable** instrument by external charger or Micro-USB
- **Temperature Probe** is included in the kit. No need for manual temperature input
- **Low Cost** Ultrasonic bolt elongation and load measuring instrument



Delta Sigma

Ultrasonic Bolt Load & Elongation Measurement Instrument

The Delta Sigma pulse-echo ultrasonic time-of-flight (TOF) measurement device; measures, displays, stores and transfers bolt load and elongation data in a new, single purpose unit. The Delta Sigma uses a rugged, sealed color touch screen for all operator I/O. The screen uses proven medical touch panel hardware. The measurement system is a hybrid technique, using the best of both analogue and digital signal processing techniques for fast signal acquisition and precise single shot TOF measurement.

All data is logically presented on a 4.3" color, resistive touch screen, usable with gloves. Data and digital signal traces are stored for later display and transfer. The unit has automatic temperature compensation through an included magnetic temperature probe. The novel memory system has a secure sector for all bolt data and a "public" sector for transfer via USB to computer

The Delta Sigma is powered by proven Li Ion batteries or through dual charger inputs: fast charge standard external 9V supply or the waterproof micro USB connector from any standard 5V USB device, battery pack or power supply.

Intuitive software developed specifically for bolting industry, the automatic echo detection algorithm has been developed with input from the most experienced users and electronic developers in the bolt tightening industry! Communicate to any PC with standard USB connection

Intuitive Operations

- No buttons or confusing arrows and abbreviations, programmable touch pad QWERTY alphanumeric input.
- Creation, storage, retrieval of individual projects (group of fasteners)
- Bolt types for projects (geometry, material, etc.) stored individually for repeated use/retrieval
- Flexible bolts/readings per project; no setup limits
- Temperature, signal parameters, scope trace and date/time stored with each reading

Weight and Dimensions

- Small, lightweight, rugged
(7x7x1,75in – 3,2 lbf -179x179x45mm – 1,5 kg)
- 480x272mm - 24bit color, sunlight readable touch panel display

Fast digital signal: location, amplitude and threshold detection

- Real time signal tracking
- Storage of individual signal parameters for qualitative Remove and Replace reading comparison

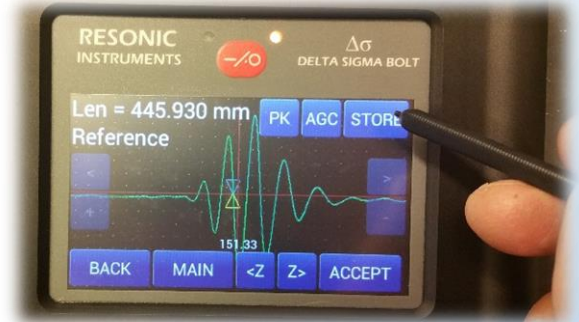


Data Storage

- Secure data file area – operator controlled public file area
- Password protected
- No special PC software required. Once connected to the PC, the Delta Sigma runs as an external hard drive for easy file management.
- Flexible bolt data storage options, large storage.
- Store and display echo traces of every signal for every reading, date/time stored with each reading.

Real time oscilloscope trace of echo

- Stored with each reading
- Automatic signal acquisition
- Full control of receiver option



Transducers

- Can be used with magnetic, non-magnetic and glue-on transducers.
- Special, modified and custom designed transducers are available.

Connectors

- Lemo 00: ultrasonic and 0B: temperature and communication,
- USB - Rugged, sealed USB micro-B

Display

- 480x272 - 24bit color, sunlight readable touch panel display
- -20 to +70°C operating range
- Full touch panel program operation

Temperature transducer

- Class A PT100

Microprocessor

- ARM® Cortex™-M4F



A-D

- Single shot @ 200MHz
- Time resolution to 0.1ns or better
- 100dB receiver
- Programmable pulser: amplitude, frequency, cycles

Fast A-D and/or dig out control

- Windowing (hi res) analog output, scaled to setup parameters, 0-10v
- Digital, isolated I/O for external control

Batteries

- 4 sealed Li Ion 18650 cells, twin smart chargers and fuel gauge chips.
- Operating time in 20+hrs
- Dual charger inputs (USB and 115/230 VAC)
- Fast 9v standard 2.1mm power supply input
- Mini USB charge/operation

Additional Features

- Real time clock – date-time stored with every reading
- Sleep mode and auto shut off
- Power/sleep LED
- Designed and manufactured in the USA

