

Dakota BT Bolt Tension Monitor (BT1)

Can be used in accordance with: NIST & MIL-STD-45662A



The Dakota BT Bolt Tension Monitor uses ultrasound to precisely measure fastener elongation, time (nanoseconds), load, stress & %strain. When nuts and bolts are fastened together under load the action of tightening the nut increases the force applied to the bolt causing elongation.

By using ultrasonics, bolt tension monitors are not affected by temperature, friction or resistance factors affecting the accuracy of standard torque measurement techniques - giving the Dakota BT1-DL Bolt Tension Monitor accuracy within 0.0001mm. Using the gauge's USB interface together with the optional shut off accessory the gauge can be programmed to automatically stop the tightening process when the appropriate load has been applied.

Features

- Temperature compensation to counteract measurement irregularity caused by temperature change
- Data storage capability: 4GB internal memory
- Auto Set feature automatically optimizes detection and adjusts display
- Hi/Lo Alarm tolerance limits work in conjunction with the data port
- Range of display & measurement options including Elongation, Load, Stress, and %Strain, RF, Rectified, Large Digits with Limits Bar

Applications



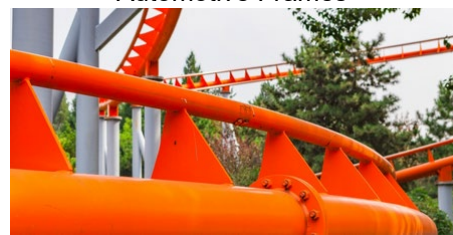
Wind Turbines



Automotive Frames



Bridge Structures



Theme Parks

Product Features

Model	BT1-DL
Display Mode	
Material thickness digits display	■
A-Scan	Rectified +/- (half wave view), or RF (full waveform view)
Measurement Range	PE - 25.4 - 25,400mm
Resolution	0.001mm or 0.0001mm switchable
Measurement Rate	
Manual	8 readings per second
Velocity Calibration Range	1250 - 13,995m/s
Temperature Compensation	■
Limit Alarm Mode	■
Memory and Data Logging	4GB internal memory
	Sequential and grid batching
	Bitmap graphic capture and capture viewer
Calibration Options	Automatic, fixed, single and two-point
Transducer Probe Type	Single element
Transducer Frequency Range	1 - 10MHz
Display	1/8" VGA greyscale display (240 x 160 pixels)
	Viewable area 62 x 45.7mm
Units (Selectable)	in/mm, μ s, °F/°C
LED Backlight	On / Off/ Auto
Repeatability / Stability Indicator	■
Low Battery Indicator	■
Battery Save Mode	Auto
Transducer Connector Type	Microdot, Lemo and BNC
USB-C Interface	■
Temperature Sensor	5 pin LEMO 1
Screen Refresh Rate	30 Hz
Timing	Precision TCXO timing with single shot 100 MHz 8 bit ultra-low power digitizer
Pulsar Type	Square Wave. Selectable 100, 150 and 200 volts. Selectable options Spike, Thin, and Wide. 80 to 400ns
Damping	50, 75, 100, 300, 600, & 1500ohms
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	25,400 mm at steel velocity
Measurement Gate	One gate with audible and visual alarm. Amplitude 5-95%, 1% steps
Setups	64 custom user defined setups; factory setups can also be edited by the user
Auto Set	Automates the detection, scope, and display settings 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
Alarm Limits Bar	Hi & Lo alarm limits for displaying an acceptable tolerance range
Detections	Zero Crossing
Time	Nanoseconds
Elongation	Change in length (mm)
Load	Force load applied (megapascals MPa)

Stress	Force for unit area stress applied (millimetres per millimetre)
%Strain	Ratio of elongation to effective length
Bolt Materials	Select types from a preset or custom list
Glue-On	Available for short bolts with short elongations to eliminate placement errors

Technical Specifications


Part Number	Description	Certificate
Z-156-0008	Dakota BT1-DL Bolt Tension Monitor (MiniMax)	●
Operating Temperature	-10 to 60°C	
Power Supply	3 x AA batteries and via USB	
Battery Life	Alkaline 35 hrs, Nicad 10 hrs, NI-MH 35 hrs	
Gauge Weight	383g - including batteries	
Gauge Dimensions	63.5 x 165 x 31.5mm	

- Certificate supplied as standard

Packing List

Dakota BT1-DL Bolt Tension Monitor (MiniMax)
3 AA Batteries
USB Type A to Type C Transfer Cable
Carrying Case
10' Lemo to Microdot Transducer Cable
PC Utility Software (download from website)
Operation Manual
Test Certificate

Part Numbers

Dakota BT2-DL Benchtop Bolt Tension Monitor (Max II)	Part Number: Z-197-0001
	

Accessories

Part Number	Description
N-306-0010	1.8 foot RS232 (DB-9 to Lemo)
A-156-8001	Temperature Sensor with 1.8m Cable
N-402-0510	USB to Serial Adapter
N-003-0330	USB-C to USB Type A 1m Data Cable