



**SDT**

# SDT 170 : RELIABILITY AND FLEXIBILITY



The complete solution for the predictive maintenance professional.

## SDT : WORLD LEADER IN ULTRASONIC DETECTION

SDT is the world leader in measuring instruments for ultrasonic leak detection, tightness testing, quality control and predictive maintenance. Our success is based on a philosophy of providing effective and affordable solutions.

For details about SDT products and applications, visit our website

[www.sdtnorthamerica.com](http://www.sdtnorthamerica.com)

THE WORLD'S SMARTEST ULTRASONIC DETECTOR

# THE LITTLE BLUE WONDER - ultrasonic detection

## ACCURACY AND REPEATABILITY

The success of your predictive maintenance program depends on data that is meaningful. The Ultrawave 170 delivers unmatched accuracy and repeatability. Is 100% uptime achievable? The Little Blue Wonder from SDT takes you one step closer.

## VERSATILITY AND FLEXIBILITY

Only SDT provides a total maintenance monitoring solution in one package. Ultrawave is a system that fits your budget today, grows with your needs tomorrow, and is always evolving, putting the most up-to-date technology in the palm of your hand for now and the future.

### Multifunctional

One instrument, endless possibilities. SDT defines the power of ultrasonic detection for predictive maintenance and energy efficiency, but it redefines the power of versatility. In addition to ultrasound, the Ultrawave 170 measures non-contact temperature, contact temperature, RPM, noise (dBA), and air flow (SCFM). Everything you need in one box.

### Intelligent

Each SDT sensor has on-board intelligence to identify itself to the Ultrawave 170 once connected. Sensor recognition means less button pushing and more productivity. Simply plug in the required sensor and the 170 does the rest.

### Rugged

The Ultrawave 170 passes the 3 meter drop test and is designed to withstand serious punishment. Encased in a sturdy aluminum outer shell, then shielded with shock-absorbing rubber, the internal electronics are protected from the harsh environment of your factory floor.

### Ergonomic

The Ultrawave 170 is designed for single-handed use. All functions are controlled by an eight key touch pad that can be accessed with just the thumb. A generous LCD screen displays all multiple parameters in 8 or more languages.

### Digital and Versatile

Only detector with true digital and RMS averaging.

Only detector to offer the versatility of multifunctional sensors.



The complete solution for the predictive maintenance professional.

## SYSTEMS AVAILABLE

### SDT170S - Entry Level System

The 170S is the entry-level system for the Ultrawave platform and includes the following standard features.

Internal Airborne sensor	8 Language menu
Input for optional sensors	Auto sensor recognition
Auto-scaling numeric bar graph	Fully upgradeable

### SDT170S+ Digital Entry Level System

### SDT170M - Multi Functional System

The 170M is a True Digital upgrade from the 170S with these additional features:

Standard contact sensor	1000 point onboard memory
Accepts multi-function sensors	4000 measured data storage
True RMS for accuracy	AVM compatible
True digital for repeatability	Fully upgradeable

### SDT170M+ Multi Functional System w/download

### SDT170MD - Multi Functional System with the power of data collection

The SDT170MD (Multifunctional-Data Collector) is a complete ultrasonic inspection and predictive maintenance trending solution. With all the features of the SDT170S Standard and the SDT170M multifunctional, we've added a 15,000-point customizable data logger to interface directly with your PC via DataManager software. DataManager is the bridge between your SDT 170MD data collector and your PC. All data is stored onboard then downloaded to PC. DataManager organizes the measurements into a logical and easily retrievable filing system, which is built and customized by the individual user. Reports are easily generated or exported to Excel with one mouseclick allowing for open platform data sharing. Customized routes are created within DataManager and uploaded to the 170MD for easy field access. Multiple parameters (Temp, RPM, dBA, SCFM) are stored for each asset in the route.



## CERTIFICATION TRAINING

Training is the foundation of an effective ultrasound program. It's a fact that certified airborne ultrasound inspectors have a deeper understanding of the technology and make more confident decisions as a result. Hands on practical training from field experienced trainers ensure your ultrasound inspection program will be successful now, and into the future.

Call today for details about classes near you. Or visit [www.sdtnorthamerica.com](http://www.sdtnorthamerica.com) to register online.



*"The Hands on portion of this class was the best of any previously attended", Brian Thorp, FL*

# MULTI-FUNCTIONAL ULTRASONIC INSPECTION - with

External sensors

Internal ultrasonic sensor



Buy what you need for today and build as your requirements evolve tomorrow. Ultrawave is a single hardware platform with endless sensor and function upgrades.

The SDT 170 Standard is easily upgraded to 170S+ to 170M Multifunctional to 170M+ or 170MD Multifunctional Data Collector with a simple upgrade key that can be emailed right to your desktop!

With the Ultrawave 170 virtually any inspection is achievable, and the possibilities are endless. Our user-friendly interface means results right out of the box and a worthwhile investment that is usually paid for after the first use.



Battery charger



PC connection for logging and analysis (170 MD)

Headphone



Loudspeaker



Vibration data collector

Waveform and spectrum analysis

without boundaries

External  
Ultrasonic  
Sensors

Multi  
Functional  
Sensors

## TECHNICAL DATA

Function	Multifunction detector
Display	Extended temperature Graphic high contrast LCD with backlighting, 100 X 32 pixels
Keyboard	8 function key s
Dimensions	203 x 38 x 88 mm / 8 x 1.5 x 3.4 inches (L x H x W)
Measuring range	10 dB V to 120 dB V
Measuring resolution	0.1 dB V
Sensitivity	Detects .004 (118 mm) diameter leak @ 6 psi at a distance of 70 feet
Threshold	1 x 10 <sup>-2</sup> - 1x 10 <sup>-3</sup> std. cc/sec. free
Accuracy	- 0.5 dB V
Signal to noise ratio	5 dB V typical
Bandwidth	(-3dB) 2 kHz
Auto power down	Auto power down after pre set time
Operating temperature	-15 C to +60 C / 5 F to 140 F
Battery pack	Rechargeable NiMH (Nickel Metal Hydrate) Autonomy of 8 to 10 hours without backlighting Recharge time: 5 to 6 hours Nominal Capacity: 1.3 Ah Life span: 500 to 1000 charge/discharge cycles Recharge only with appropriate charger
Housing	Extruded aluminum
Protective Cover	Rubber resistant to hydrocarbons (Fluorsilicone)
Weight	Approximately 700 g / 24.69 oz. (with battery and holster included)
Warranty	1 year parts and labour 5 years with product registration
Frequency Range	16KHz-190 KHz tunable in 1/5th KHz



Extended distance



Threaded sensor



Flexible sensor



Parabolic sensor



Magnetic sensor



Contact Probe



Acoustic Lube Adapter



Noise sensor - dBA



Tachometer-Laser



Contact T interface



Infrared T sensor



flow sensor - SCFM

SDT's leak testing technology is Type Approved by the world's major marine classification societies.



# ENDLESS APPLICATIONS FOR INDUSTRY - Limited



## Leak Detection

Compressed air leaks are the most expensive utility waste in manufacturing. Turbulence from leaks creates white noise with a strong ultrasonic component. Scan an area with the Ultrawave and hear the turbulent rushing sound through the headphones. Ultrawave pinpoints all pressurized gas and vacuum leaks regardless of ambient background noise. Finding leaks can save hundreds of thousands of dollars.



## Bearing Condition Monitoring

Roller bearings produce ultrasonic friction as the internal rolling elements turn against the raceway. Likewise, the friction absorbing properties of grease means a well-lubricated bearing produces less friction than a bearing that lacks lubrication. True digital RMS readings from the SDT 170 provide accurate and reliable advanced warning of impending failures to rotating equipment.



## Ultrasound Based Lubrication

AVM - Acoustic Vibration Monitoring trends high frequency bearing energy to determine proper lubrication intervals and predict when the bearing is entering its FIRST stages of wear.

Over lubricating bearings can damage seals, build pressure on the bearing, and cause premature failures. Over greasing an electric motor can push lubricant into the windings causing shorts and more severe damage. Under lubricating bearings negatively affects the lifespan of rotating machinery also. So how can you get it just right??

The SDT 170's advanced digital detection techniques opens up communications between bearing and lubricator. Let the bearing tell you how much grease is enough.



## Steam Trap Inspection

Rising energy costs make steam an expensive utility too expensive to waste. A typical failure rate is 30-40% of a facility's steam trap population. Failed traps also contribute to contaminated, poor quality steam and dangerous water hammer.

Ultrasonic testing gives the inspector an "inside view" of the trap. The SDT 170 translates high frequency ultrasonic noise to audible frequencies localized to the source of contact. The inspector will not be disturbed from ambient parasite noise downstream.

Temperature measurements upstream and downstream of the trap can often provide alerts to failed traps. The SDT 170 M and 170 MD Steam Trap Inspector's Kit includes a standard non-contact temperature measurement interface to further enhance trap inspections.



## Valves and Hydraulics

Internal blockage or leaks in valves can be discovered precisely while the system is on-line. Troubleshooting hydraulic circuits to find internal leakage is fast and easy with the Ultrawave. With the Ultrawave in contact mode take sample readings along the circuit. Technicians can clearly define the direction of flow, and more importantly, the source of trouble even in high noise areas. Internal leakage across seals on hydraulic rams produce microscopic bubbles of oil which in turn pop as they pass from pressure side to non-pressure side. These small explosions produce ultrasound energy which is easily detected in the Ultrawave's headset. Tune the frequency of the detector to eliminate competing ultrasounds.



## Pump Cavitation

Cavitation is usually the result of a pump being asked to do something beyond its specification. Small cavities of air develop behind the vanes. These pockets have a destructive effect on the pump's internal components, including pitting and scarring the surface of the vanes.

With the Ultrawave in contact mode, isolate the pump vanes and listen for small air pocket explosions. Comparing similar pumps will help the uninitiated, but with some experience an operator

ted only by the imagination.



will quickly be able to detect pump cavitation.

### Boiler, Heat Exchanger, and Condenser Leaks

Use the Ultrawave to scan for external pressure or vacuum leaks in boilers, heat exchangers, and condensers. Listen for the same rushing sound that is associated with compressed gas and vacuum leaks. All pipe connections, flanges, seals, and access doors should be inspected as part of regular PM's.

Tube leaks in condensers and heat exchangers can be inspected using either the pressure method, the vacuum method, or the bisonic transmitter method. Choose the method that suits your application and see your inspection time decrease dramatically.



### Reciprocating Compressors

Reciprocating compressor valves open and close to allow internal combustion motors to breathe. When these valves become dirty, or carbonized, their efficiency is reduced. A valve that is seating properly should be quiet while defective valves are characterized by the familiar rushing or turbulent sound of a leak. Signals from valves can be analyzed with SDT's Ultranalysis software. Real-time waveform analysis will reveal heavy jagged peaks representative of valve leaks. Trend these changes to PC with the SDT 170 MD and Datamanager software.

### Electrical Inspections

Corona discharge, arcing, tracking, damaged line bushings, and other potentially dangerous and wasteful conditions in high voltage systems produce ultrasound as a warning of future failure.

By itself, or as a compliment to Infrared Imaging, Ultrasonic Detection has become the technology of choice for electrical inspections of:

- Transmission & Distribution Lines
- Substation Inspections
- Switch Gear
- Transformers
- Partial Discharge
- Arcing, Tracking, and Corona
- Radio/TV Interference



Electrical faults emit ultrasound at the site of the problem. Scan an area in the same way one would for leaks. Characteristic frying, popping, buzzing, and humming sounds can be associated with different faults. Build a library of faults by recording sound waves and sharing them on your company intranet.

### Tightness Integrity - Wind Noise & Water Leaks

Quality control applications were developed for the transportation sector to improve the tightness of vehicles. The method consists of flooding the interior of a volume with microscopic ultrasound waves. Due to their properties these waves can penetrate small holes. Using the SDT 170 detector on the outside of the volume inspectors can quickly pinpoint the source of defects that could become potential sites of water leaks or wind noise. Current sector uses:

- Marine Industry Hatch Covers of Cargo Ships
- Automobile Wind and Water Leaks on Cars
- Aeronautics Integrity of Aircraft and Helicopters
- Transportation Trucks, Buses, Trains,
- Buildings Integrity of Building Envelopes
- Military Submarines, Aircraft, Space Vehicles
- Nuclear Containment Wall Integrity





## APPLICATIONS

Model Features	170S	170S+	170M	170M+	170MD
Pressure leaks					
Vacuum leaks					
Bearing Inspection					
Bearing Trending					
AVM Lubrication					
Steam Trap Inspection					
Reciprocating Compressor Valves					
Valves and Hydraulics					
Pump Cavitation					
Electrical Fault Inspection					
Heat Exchangers and Boilers					
Tightness Integrity					

Whatever your application(s), SDT has a kit designed specifically to fill your needs and your budget. Buy what you need today and build as your requirements evolve tomorrow. The SDT 170 S is easily upgraded to 170 M or MD.



## Features

		DBuV Readout	Ultrasonic Sensors	Multi Functional Sensors	Download Data	Data Manager Route Software	Digital Display	Tunable Frequency	Upgrade to Higher Function Level	Connect To Vibration Analyzer
Available KITS	Flex.US									
	170S									
	170S+									
	170M									
	170M+									
	170MD									
	170MTT									
	Sherlog S+									
	Sherlog M+									
	Sherlog TA									

represented by:

### SDT North America

Telephone: 905-349-2020  
 Fax: 905-349-2552  
 Toll Free USA & Canada: 1-800-667-5325  
 Toll Free Fax USA & Canada: 1-800-224-1546

Due to continued research and development, specifications of this product can change without prior notice.

Copyright SDT North America 2003. All Rights Reserved