



ULTRASONIC FLAW DETECTOR

# SONOSCREEN ST10

FOR NONDESTRUCTIVE TESTING

MADE IN GERMANY

SONOTEC 

# SONOSCREEN ST10

Developed with the help of experienced material testing experts, the compact ultrasonic flaw detector unites high-spec performance with user-orientation. A clearly-structured menu quickly guides the tester through all of the steps required for test set-up. Efficiency is also boosted by the

full-text menu labels and by the complete overview of all probe settings. This makes the SONOSCREEN ST10 an ideal tool for all standard ultrasound inspections, from weld seam testing, wall thickness measurement and sheet metal testing to the detection of invisible cracks, inclusions, cavities and

## ADVANTAGES AT A GLANCE

- Large, high-resolution 8" graphic display (174 x 104 mm), optimal readability even in direct sunlight
- Robust aluminum casing, IP 66 protected
- Clearly-structured menu and intuitive usability
- Configurable display with up to 10 measurement values
- Display of a measurement range up to 10 m in one A-scan
- Editable database for materials, probes and setups
- 400 V powerful square wave transmitter for high material penetration
- 5 ns resolution over the entire measurement range (equivalent to 0.03 mm in 10 m steel)
- 2 GB internal memory for storing up to 60 000 A-scans plus device configuration
- Fast external data storage and transfer via USB flash



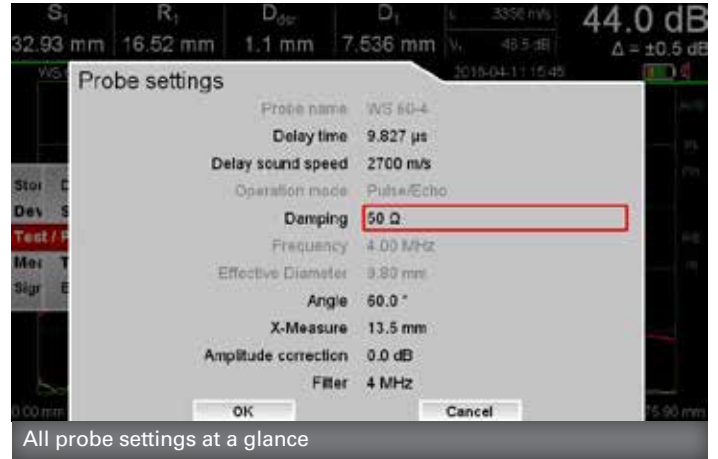
Fast setup and clear user orientation due to menu tree display and red menu path highlighting

# INTUITIVE OPERATION

The SONOSCREEN ST10 offers a clearly structured menu system optimized to support the testing process plus intuitive device operation. This helps to increase testing reliability and to save valuable testing time. By turning and pressing the rotary knobs, you can browse quickly through the menu. The complete menu tree is displayed in full text and the selected menu path is highlighted in red.

The SONOSCREEN ST10 guides you step-by-step through the pre-test set-up. All parameters needing configuration are arranged logically one after the other. This ensures that all relevant parameters are set before testing begins.

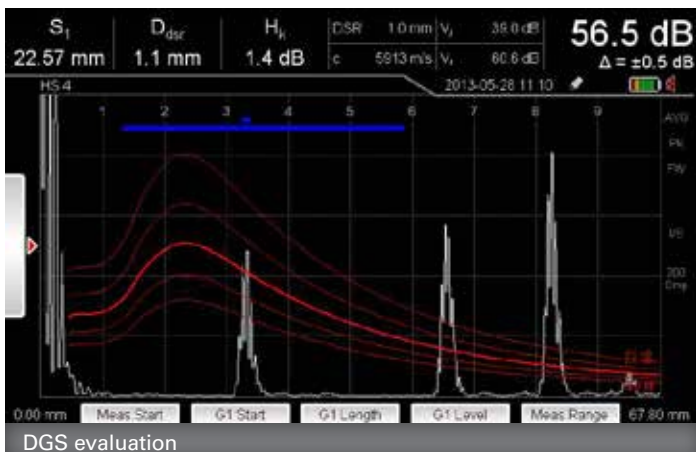
**Useful database also helps to shorten the preparation time:** the database already contains all SONOSCAN probes. Other probes are easy to add. The provided probe settings overview enables quick verification of the entered data. Selected calibration blocks are also stored to enable



rapid distance calibration. Device setup, probe and material databases can be stored on a USB flash drive and transferred to other SONOSCREEN units.

# EVALUATION METHODS

- Optional DAC/TCG, DGS (AVG) and AWS D1.1
- DGS curves for single-element probes and sender/receiver probes
- DAC evaluation with TCG
- Single point modification of DAC curve
- Up to 4 additional freely-positionable curves can be displayed for DGS and DAC (in 0.5 dB steps)
- Amplitude evaluation according to AWS D1.1
- Comparison and envelope curve function



# COMPLETE DOCUMENTATION

Test protocol		SONOTEC
Sonotec GmbH		
Tester: John Smith		Date: 2016-04-18
girder T15-3		Test on: 2016-04-11 15:44:54

<b>Device Settings</b>	Gain	44.0 dB	<b>Probe</b>	Probe name	WS 60-4
	Measurement start	0 mm		Delay time	9.827 µs
	Measurement range	75.9 mm		Delay sound speed	2700 m/s
	Voltage	190 V		Damping	50 Ω
	Pulse width	125 µs		Operation mode	pulse-echo
	PRF	high		Nominal frequency	4 MHz
	Rectification	full		Effective diameter	9.8 mm
	Digital filter	off		Dead range	shortened
				Angle	60.0 °
<b>Distance adjustment</b>				X-measure	12 mm
	Reference position 1	25 mm		Amplitude correction	0.0 dB
	Reference position 2	100 mm			
<b>Measurement object</b>			<b>Sensitivity adjustment</b>		
	Sound speed	3356 m/s		Amplitude evaluation	AVG
	Sound attenuation (object)	10.0 dB/m		Transfer correction	-1.5 dB
	Thickness	12 mm		Sound attenuation (reference)	6.0 dB/m
	Diameter	flat		Reference echo type	backwall
				AVG curve	3 mm
<b>Measurement</b>				Multi-curve display	off
	Measurement mode	peak			
	Gate 1	l = 20.9 mm ↔ = 19 mm ↑ = 59 %			
	Gate 1 logic	positive			
	Gate 2	l = 23 mm ↔ = 7.11 mm ↑ = 46 %			
	Gate 2 logic	off			
	Noise suppression	0 %			

**Comment:**

Fast documentation of the test results with all parameters



# USER-FRIENDLY – ERGONOMIC DESIGN – EXTREMELY ROBUST

Simple freezing of the A-scan

Gate zoom

Screenshot

10 brightness levels and 6 colour schemes - ensuring optimal readability even in direct sunlight

Lock function keys - gain adjustment remains active

Acoustic and color-coded gate alarm

Customizable display of measurement values

Measurement context, probe, date and time at a glance

Large, high-resolution A-scan display

5 soft keys – for rapid, streamlined operation

The main display shows an A-scan with a peak at 83.0 dB. Other parameters include S<sub>1</sub> 28.50 mm, D<sub>gate</sub> 0.9 mm, H<sub>g</sub> -1.6 dB, DSR 1.0 mm, V<sub>1</sub> 60.0 dB, V<sub>2</sub> 86.0 dB, c 3250 mm/s, and date/time 2013-04-18 15:11. The bottom of the screen displays: 0.00 mm, Meas Start, G1 Start, G1 Length, G1 Level, Meas Range 85.12 mm.

USB port

Probe connections, voltage supply, digital/analog output (optional)

Stable, multi-angle fold-out stand – also serves as carry handle

Rugged protective frame – ideal for tough testing environments

## THE FULL PACKAGE

ULTRASONIC FLAW DETECTOR

- + DGS evaluation ...
- + DAC evaluation ...
- + TCG function ...
- + AWS evaluation ...
- + Charger ...
- + USB flash drive ...
- + Couplant ...
- + Transportation and storage case ...
- + Protective working case ...
- + Operating manual and calibration certificate ...

## SONOSCAN ULTRASONIC PROBES

We offer an extensive range of different SONOSCAN probes. Simply choose the probe that matches your application from our product range.



**ANGLE BEAM PROBES** – in a range of sizes, angles and frequencies

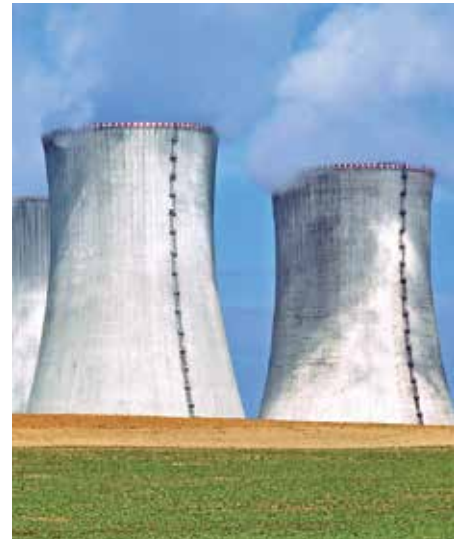


**STRAIGHT BEAM PROBES** – pulse-echo and dual element probes detect even the smallest flaws



## Key applications

- ✔ Weld seam testing
- ✔ Casting and forging inspection
- ✔ Sheet metal testing
- ✔ Shaft and axle testing
- ✔ Plastic and composite testing
- ✔ Wall thickness measurement



# TECHNICAL DATA SONOSCREEN ST10

## GENERAL DATA

<b>Dimensions (W x H x D)</b>	310 x 206 x 77 mm
<b>Weight</b>	2900 g
<b>Temperature ranges</b>	<b>Storage temperature:</b> -20 to +60 °C <b>Operating temperature:</b> -20 to +60 °C
<b>Battery operation</b>	Internal Li-Ion battery Operating time: up to 13 hours
<b>Mains/ Charging operation</b>	Via external power supply with wide range input (100 to 240 V, 1.07 A)
<b>Connectors</b>	<b>2 probe connectors:</b> LEMO 1S <b>Switching output/Analog output*:</b> LEMO 1S <b>Power supply:</b> LEMO 1S  2 USB connectors
<b>Protection type</b>	IP66
<b>Menu languages</b>	English, German, Chinese, Russian, Spanish, Italian, Japanese, Turkish, Polish, Czech, Finnish (others upon request)
<b>Operating mode</b>	Pulse-Echo, Transmit-Receive, Through-Transmission
<b>Measurement unit</b>	Inch (in) or millimeter (mm)
<b>Measurement range</b>	10 to 10 000 mm (up to 20 000 mm with pulse shift of max. 10 000 mm)
<b>Sound velocity</b>	Adjustable from 500 to 15 000 m/s, in steps of 1 m/s or fixed preset values
<b>Measurement resolution</b>	0.001 mm within the measurement range up to 10 000 mm (depending on sound velocity)
<b>Amplitude evaluation</b>	DGS*, DAC* (incl. TCG) or AWS D1.1*
<b>Standards</b>	DIN EN 12668-1, ASTM E1324

## SCREEN

<b>Screen type</b>	8" color display in 16:9 format; WVGA 800 x 480 pixels
<b>Dimensions</b>	174 x 104 mm
<b>Lighting/ Colour options</b>	Adjustment of brightness and color to lighting conditions; 10 levels of brightness

## DISPLAY

<b>A-scan dimension</b>	<b>Size:</b> 156 x 76 mm; <b>Resolution:</b> 720 x 350 pixels
<b>A-scan mode</b>	Normal, comparative curve or envelope
<b>Measurement values</b>	Up to 10 fields, customizable
<b>Information/Settings</b>	Probe; Measurement context; Date and time; Adjusted gain and increment; Current device settings and measurement status; Registration of USB flash drive; Color-coded charge status display, Mains supply

## TRANSMITTER

<b>Pulse shape</b>	Rectangular, unidirectional
<b>Polarity</b>	Negative
<b>Voltage</b>	50 to 400 V, adjustable in steps of 10 V
<b>Pulse width</b>	Automatic, or 20 to 1000 ns, in steps of 5 ns
<b>Pulse frequency</b>	Automatic or manual (low, medium, high, maximum)

## RECEIVER

<b>Amplifier</b>	<b>Dynamic range:</b> 0 to 110 dB <b>Increment:</b> 0; 0.5; 1; 2; 6; 12 dB
<b>Rectification</b>	Full-wave; positive/negative half-wave; RF
<b>Reject</b>	0 to 80 % of screen height
<b>Amplitude measurement</b>	0 to 125 % of screen height
<b>Digital filters</b>	0.5; 1; 2; 2.25; 4; 5; 10; 15; 1 to 5; 5 to 10; 10 to 15; 1 to 20; 0.5 to 20 MHz

## ADJUSTMENT

<b>Measurement range</b>	0.5 to 10 000 mm (steel)
<b>Distance adjustment/ Probe calibration</b>	Automatic 2-point adjustment: calculation of sound velocity and probe delay by use of two adjustment echoes

## GATES

<b>Measuring gates</b>	2 independent gates; Color bars (gate 1: blue, gate 2: green); Position and width adjustable over the full measurement range; Response threshold adjustable from 10 to 90 % of screen height in steps of 1 %
<b>Functionality</b>	Alarm in case signal exceeds or falls below the threshold value; Acoustic and visual signal (LED; color of signal corresponds to the color of gate); 2 switching outputs* (1 output per gate); 1 analog output* (sound path in % inside the gate or amplitude in % of screen height)
<b>Zoom</b>	Magnification of gate area over the full gate width

## DATA STORAGE

<b>Storage capacity</b>	<b>Internal:</b> 2 GB, for up to 60 000 A-scans incl. device setup; <b>External:</b> USB flash drive
<b>Storage options</b>	<b>Internal and/or external:</b> Screen shot incl. all parameters, A-scan, measurement context, date and time; Setup: with all device and probe settings; Material database and Probe database
<b>Report Generator</b>	Software* to create test protocols including screenshots

SONOTEC preserves the right to change technical specifications without further notice. (Rev. 3 / 2016-04-18)

\*Optional

## FAST SERVICE & PROFESSIONAL SUPPORT

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