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Smartor

AdvancedNDT

Ultrasonic Flaw Detector & Thickness Gauge

Upgradeable

One-hand Operation

Flat Weld Simulation

Smart Test Wizard

SIUI

Advanced NDT Limited
Unit 4 Elgar Business Centre
Moseley Road
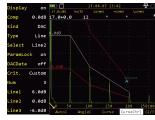Hallow, Worcester
WR2 6NJ, England
Tel: 01905 371460

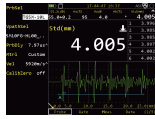**Web:** www.advanced-ndt.co.uk
Email: sales@advanced-ndt.co.uk

Smartor

Advanced Ultrasonic Testing & Thickness Measurement

● **Upgradeable**

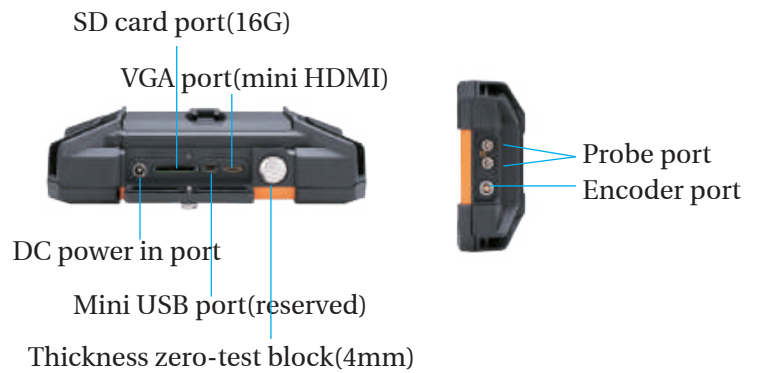Version 1: Ultrasonic Testing

Version 2: Thickness Gauge

Upgradeable (license activation)

UT + TG
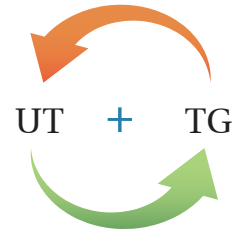
● **One-hand Operation**

Wrist strap

Back strap

SD card port(16G)

VGA port(mini HDMI)

Probe port
Encoder port

DC power in port
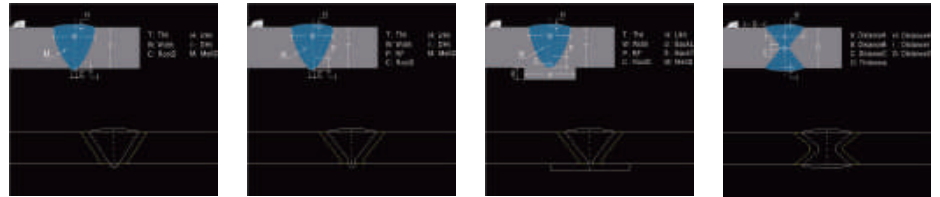
Mini USB port(reserved)

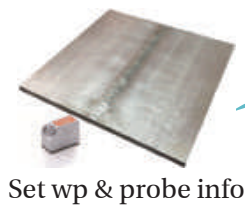Thickness zero-test block(4mm)

● **Flat Weld Simulation**

Dynamic beam tracking to visualize the flaw location

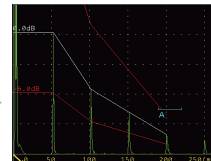Up to 14 types of weld simulation

● **Smart Test Wizard** Guide you step by step for the first time operation.

Set wp & probe info

Calibration

Make DAC/ AVG curve

Detection

Superior Features

● IP 66 with compact size: 198 (W)* 128 (H) *52 (L) mm
● Light weight: 0.9kg only, including battery
● 5.7" LCD with high resolution 640×480 pixels
● Adjustable pulse width, negative square wave transmission up to 350V.
● Operating frequency range: 0.5~20MHz, multiple steps of wide broadband and narrow-band for selection.
● Easy operation: only a few buttons, intuitive interface and logical menu, support right/left-hand operation, outdoor mode.
● Conventional UT functions
 √ Weld, plate and forging test wizards are available.
 √ Peak memory, DAC curve, AGC (Auto gain control), video record makes convenient flaw inspection.
 √ Optional functions: B-Scan, TCG, FFT (probe spectral analysis), CSC (curved surface correction), flat weld simulation, crack height measurement, BEA(backwall echo attenuator), AWS, API 5UE.
● Thickness measurement functions
 √ A-scan thickness measurement(echo to echo mode, through coating measurement)
 √ Auto-search, velocity measurement, alarm and dataset management.
 √ Optional functions: CoatMode, B-Scan, MultiLayers, Vpath, TDG and temperature compensation.
● Norm compliant: EN12668-1: 2010/ASTME317(for UT) and EN15317-2007(for TG)
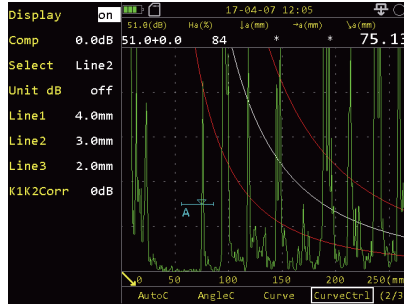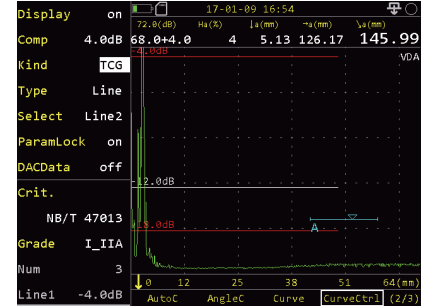
Smartor
Ultrasonic Testing

DAC
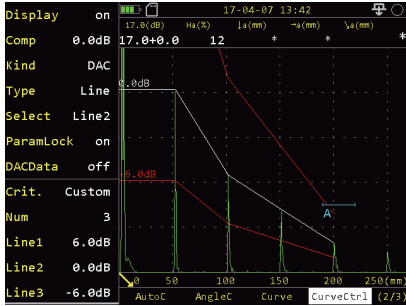
● Bring easier and more convenient flaw evaluation.

AVG/DGS

● Auto created by taking a known flat-bottom hole or large flat-bottom echo for reference.
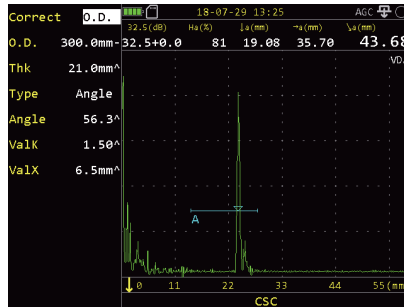● GE/Olympus probe listed.

TCG

● Up to 6 (curves/ lines), each one max. 10 reference points.
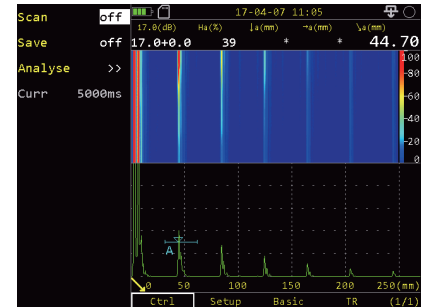
FFT (Probe Spectral Analysis)

● The probe waveform, spectrum and center frequency of the probe can be measured precisely by capturing echoes.

CSC (Curved Surface Correction)

● For depth and horizontal distance correction when testing circumference with an angle probe.

B-Scan

● Display A-scan echo in imaging mode based on time or encoder, so as to achieve more intuitive test result for easy observation and analysis.

CrackMeas (Crack Height Measurement)
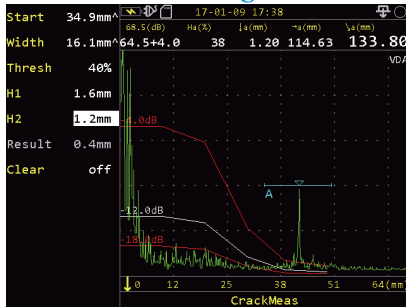
● The crack height is automatically calculated with this function.

BEA (Backwall Echo Attenuator)
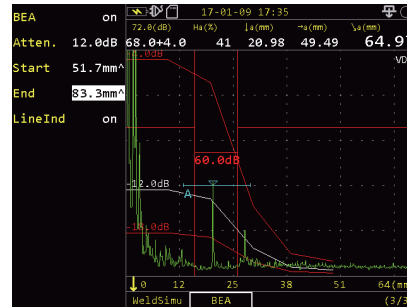
● This function is to help set a gate over an area and adjust the gain for this area regardless of the global gain. It is very useful for inspection of Forgings and Castings with allowing independent gain control of the area under the gate with the BEA for backwall echo monitoring.

On-site Application

Smartor

Ultrasonic Thickness Measurement

TDG (Time Distance Gain Curve)

● It can be used for compensating the loss of echo amplitude due to propagation of sound path.

B-Scan

● Based on time interal or encoder, display the measurement readings in B-mode image.
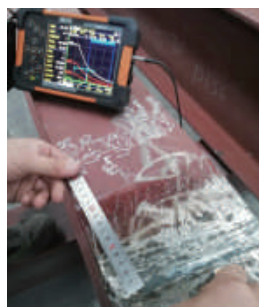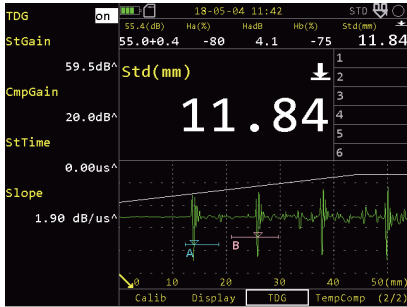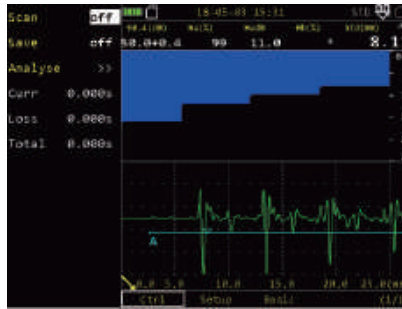
CoatMode

● After setting the coating velocity, coat and base material thickness can be displayed at the same time.

MultiLayers
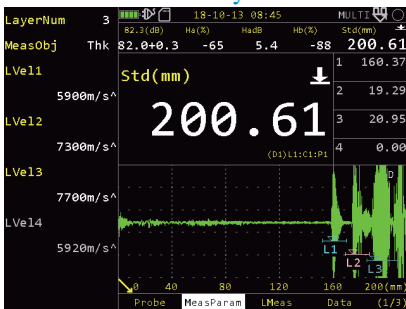
● Up to 4 layers can be measured at the same time.

TempComp
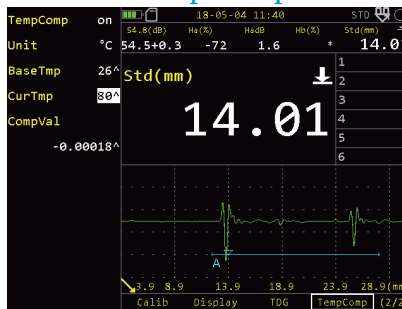
● When there is temperature difference between the calibration block and the detected workpiece, it can be used for temperature compensation. Adjustable range is -10 to 400 ℃.

Vpath

● All the original dual element probes have a set of default V-path calibration curves. Users can make a set of UserVpath curves for a specific probe.

On-site Application

Port dock thickness measurement

TG data sets

MultiLayers-thickness measurement

With PES-02D for encoded B-Scan

SuporUp PC Software

Checking data file, Screen capture, Measuring data analysis, Playback. Generating test reports in word or excel format. Abundant report samples are available.

It can be installed in every operator's laptop without extra cost.

Technical Specification

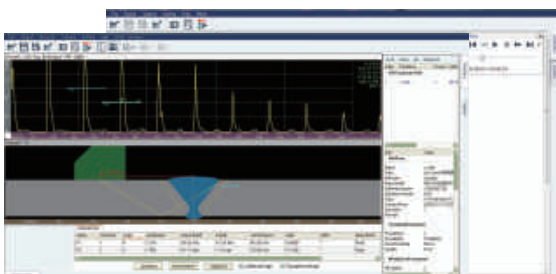|	Ultrasonic Testing	Thickness Measurement
No. of Channel	1	
Probe Connector Type	LEMO 00 (2pcs)	
Work Mode	——	Standard (R-B1, measurement from transmit pulse to the first bottom wave). All measurement using Zero Crossing. Echo to Echo (B1-B2, measurement by auto-tracking the second bottom wave according to the first bottom wave). Through coating measurement.
Pulse	Negative square, Negative spike pulse	Negative square, Negative spike pulse (auto fits the probe)
Transmitting Voltage	50~350V, step 50V	50~350V (auto fits the probe)
Pulse Width	Negative square: 50~500ns, step 10ns Negative spike pulse: ≤40ns	Negative square: 50~500ns (auto fits the probe) Negative spike pulse: ≤40ns (auto fits the probe)
PRF	Negative square: 10~1000Hz adjustable, step 10Hz Negative spike pulse: 10~2000Hz adjustable, step 10Hz	200Hz
Damping	50/1000Ω, 2 levels	50/1000Ω, 2 levels (auto fits the probe)
A/D Sampling Rate	240MHz/10bit	
Sampling Point	1024 points, 16bit/point	——
Gain	0~110dB, step: 0.5/2/6/12dB	0~110dB Manually adjustable, step: 0.5/2/6/12dB Auto adjustable (auto-search or auto-gain)
Fine Gain	-4~+4	——
Surface Compensation	Full gain range	——
Bandwidth	0.5~20MHz(-3dB)	
Operation Frequency	1~4/0.5~10/2~20/1/2.5/4/5/10/13/15/20MHz, 11 levels	
Rectify	Negative/ Positive/ Full/ RF/ Filter	Negative/ Positive/ Full/ RF
Reject	0~80%, step 1%	——
Detection Range	0~15000mm, min. display range 2.5mm	0.5~600mm (subject to probe, material, temperature and selected configuration)
Indication Resolution	——	0.001/0.01/0.1 mm (0.0001/0.001/0.01 inch)
Indication Precision Error	——	0.80~9.99mm ± 0.05mm 10.00~99.99mm ± (1‰H + 0.04)mm 100.0~400.0mm ± 3‰H mm Tested with TGM5-10L probe; H is the measured thickness.
Tube Wall Thickness Measurement	——	With TGM5-10L probe, it can measure steel tube with diameter no less than 20mm and wall thickness no less than 2mm.
Material Velocity	100~20000m/s, min. step 1m/s	100~20000 m/s
Display Range	——	5~1000mm
Pulse Shift Range	-10~1000mm, min. step 0.1mm	-10~500mm
Probe Zero	0~200us, min. step 0.01us	0~200 us
Probe Flank	0~100mm, step 0.1mm	——
Wizard	For weld, plate and forging testing	——
Test Point	Peak/ Flank/ J Frank	
Measurement	Gate: amplitude, amplitude dB difference, sound path, horizontal distance, vertical distance, south path difference between Gate A and B; Cursor: 2 cross cursors, measuring horizontal and vertical positions on B scan image, and distance between cursors (activated for optional B scan)	——
Gate Mode	Standard	Gate A is selected in standard measurement mode.
No. of Gate	2	——
Gate Start	Full range	Gate A start: -10~1000mm, min. step 0.1mm
Gate Width	Full range	Gate A width: 1~1000mm, min. step 0.1mm
Gate Thresh	10~90%, step 1%	Gate A thresh: 10~90% or -10~-90%(for RF), step 1%
Auto Search	——	Off/on; If enabled, auto adjusts to the proper display range, gain and gate position based on the measured wave signals, so as to improve measurement efficiency.
Velocity Measurement	——	Velocity dynamic measurement
Calibration	zero point/zero point + velocity/ probe angle	Measure the known reference block for fast zero point calibration Custom calibration (zero point/ zero point + velocity calibration)

	Ultrasonic Testing	Thickness Measurement
Measurement Reading Mode	——	Std/ MinVal/ MaxVal/ Avg/ Diff
Alarm	Audible and visual alarm: positive/ negative	Upper and lower limit alarm(sound, indicator light)
Screen Display Combination	Normal, full screen	A/BVa, A/Ba/SVa, Ba/BVa (AScan+big value/ AScan+data grid+ small value/ data grid + big value)
Refresh rate of measurement	——	4/8/16/32Hz
Curve Function	DAC up to 6 (curve/ line), each one max. 10 reference points. AVG/DGS	——
Auxiliary Function	Full screen, coordinates switch(sound path/ depth/ horizontal), single/continuous auto gain (10~100%, step:10%), SecColor, WaveComp, WaveFill, PeakEnv, PeakEcho, FastScan, Outdoor, gate magnify, CineRec, PrintScreen, Auto freeze(Gate: A, B, A and B, A or B)	Freeze, auto gain, history reading column, last reading maintained, mm/inch switch, outdoor mode.
Storage Function	Save, recall and delete the parameter, data files, record files, printscreens, depends on the SD card capacity.	Save, recall and delete the parameter, data sets, printscreens, depends on the SD card capacity.
Dataset File	——	1D/2D/3D file format Measurements recorded and displayed in grids; record length customizable. Each record point data includes measured values, basic parameter settings and A-scan waveform data.
Data Post Processing	Playback, analysis, reports of parameters, record files, printscreen files in SuporUp software.	Playback, analysis, reports of parameters, data sets, printscreen files in SuporUp software.
Time Base linearity	≤0.5%	——
Vertical Linearity	≤3%	——
Amplitude Linearity	≤±2%	——
Attenuator Precision	20dB±1dB	——
Dynamic Range	≥32dB	——
Optional Software	API 5UE, TCG, AWS, CSC, CrackMeas, FFT, BEA, FlatWeldSim, B-Scan	CoatMode, Vpath, TDG, B-Scan, TempComp, MultiLayers

General Technical Specification	
Display Screen	5.7" high brightness TFT LCD, 640×480 pixels
Measure Unit	Inch/ mm
Peripheral port	Mini USB, SD card (16G) and VGA ports (Sharing with same mini HDMI with I/O signal port)
Language	English/ Spanish/ German/ French/ Portuguese/ Polish/ Czech/ Italian/ Turkish/ Russian/ Japanese
Power Supply	DC 12V (external power supply); 7.4V (battery)
Battery Operating Time	≥8h (under factory default mode)
Operation Temperature	-10℃~ +45℃
Storage Temperature	-20℃~ +60℃
IP Code	IP66
Weight	Approx. 0.9kg (including a 0.24kg battery)
Dimension (W×H×L)	198 ×128 × 52 (mm)
Encoder Connector	1pc (4-core)
Internal Storage	6G