



Simplifying NDT

da Vinci alpha

ULTRASONIC FLAW DETECTOR

Thickness Survey

- ▶ Encoded B-Scan.
- ▶ Measurement resolution of 0.01mm
- ▶ Test Range : 2.5mm to 10 meters (Steel)
- ▶ Auto Tracking for Immersion testing and thro' coating / Oxide Scale Thickness Measurement.
- ▶ Minimum thickness capture mode.
- ▶ Powerful ' Thickness Data Management Software ' for thickness logging in sequential, 2D and 3D file configurations.
- ▶ Dual independent gates with different colours for two separate measurements.

Flaw Detection

- ▶ Colour coded skips/legs during weld inspection
- ▶ Peak Freeze / Active Echo Dynamic feature.
- ▶ Tuned Amplifier for better performance.
- ▶ RF display for better measurement accuracy and flaw characterization.
- ▶ Auto Calibration / Two point calibration.
- ▶ PRF down to 4 Hz for large objects / forgings to avoid phantom echoes.
- ▶ Simultaneous display of four measurement values.
- ▶ Frequency down to 250 KHz (0.25 MHz) for checking composites and highly attenuative materials.

- ▶ Probe Frequency upto 20 MHz for testing on low thicknesses and better sensitivity.

Flaw Sizing

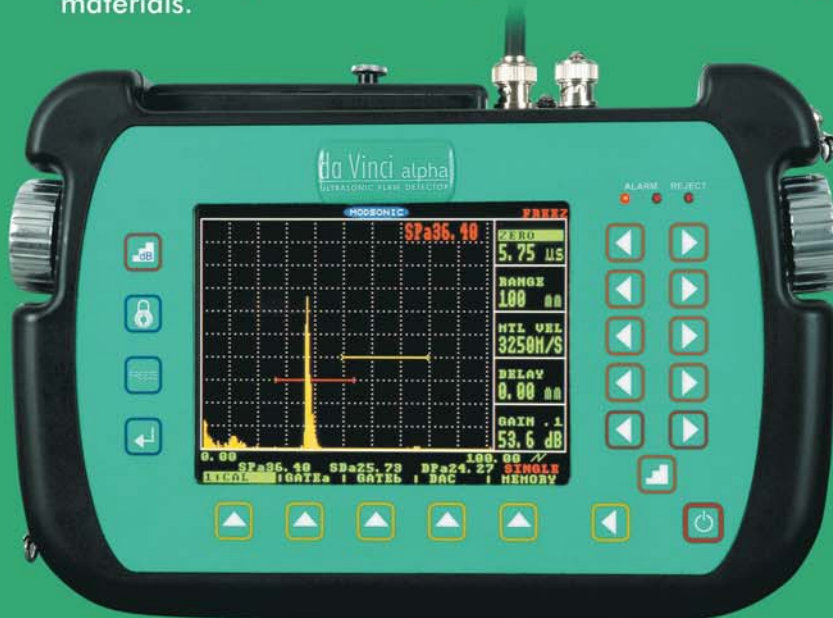
- ▶ Dynamic DAC, DGS/AVG, TCG features and AWS software (AWS D1.1/D1.5).
- ▶ DAC as per ASME, ASME III, JIS.

Memory

- ▶ On-board memory of 500 A-Scan, 20,000 thickness data, 50 B-Scan, 50 set-ups.
- ▶ Virtual unlimited storage capacity extension thro' the use of USB removable disc (pen drive).

Communication / General

- ▶ Rotary scroll knobs for analogue feeling.
- ▶ USB port for connectivity with PC and peripherals.
- ▶ World-class Li-Ion battery with option of using 6 normal C size alkaline batteries.
- ▶ VGA output for external monitor or video projectors / beamers.
- ▶ Complies to EN-12668 and ASTM E317.
- ▶ Five options of display background colours including black and white for day light viewing.
- ▶ All joints with gasket for IP sealing.
- ▶ On-board battery charger. Optional external charger



Battery compartment with quick release fasteners



Carrying handle



Neck strap for hands free use



On the stand

Brief Technical Specification

Pulser /Receiver

Test Range	: 2.5mm to 10 meter (0.100 in to 400 in) (steel).
Velocity	: 1000met./sec to 15,000 met./sec(40 in/millisc. to 600 in/millisc.). In Hot Key mode it has preset values.
Delay	: Variable from -10.0 to 2000 mm (-0.3 to 30 in).
Gain	: 100dB calibrated gain adjustable in 0.1, 0.5, 1, 2, 6 or 12 dB step.
Rejection	: 0 to 100%FSH with LED indicator.
Rectification	: Full-wave, Half wave -ve, Half wave +ve and RF mode.
Frequency	: It has tuned amplifier with four bands : (a) 0.2 MHz to 1 MHz (b) 0.5 MHz to 4 MHz c) 0.8 MHz to 8 MHz d) 2 MHz to 20 MHz
Test Modes	: Pulse echo and Transmit/Receive.
Transmitter	: Transmission pulse Negative spike (Pulse Rise Time < 10ns) and with selectable high (300 Vp) or low (250Vp) power.
Damping	: Damping high/low is selectable. (High =45 ohms, Low=345 ohms)
Connectors	: BNC or LEMO (Size 1) factory optional.
PRF	: 4Hz to 500Hz, Selection in 10 scalable steps. PRF can go down up to 4Hz when PRF is selected to 1.
Linearity deviation	: Vertical : ±3% , Horizontal : ±0.5%.

Monitor

Monitor	: Dual gate adjustable in 1% of Screen height with, Positive/Negative Logic, Gate Expand, Interface trigger modes.
Gate Expand	: Expands Range to width of the gate.

Memory

A-Scan memory	: 500 Trace Patterns can be stored (with Note/Detail) which can be recalled, printed or transferred to PC via USB. Unlimited no. of A-Scan can be directly stored in USB Disk with auto file naming.
Calibration Set-up Memory	: 50 different calibration set-ups can be Stored and Recalled.
B-Scan memory	: 50 B-Scan Patterns can be stored (with Note/Detail) which can be recalled, or transferred to PC via USB. Unlimited no of B-Scan can be directly stored in USB Disk with auto file naming.
T-LOG	: 20,000 readings can be stored in 20 different files. Five different types of templates are available for file creation. Stored readings can be recalled or transferred to PC via USB. Unlimited no. of Thickness readings can be stored in USB Disk with auto file naming.

Flaw Sizing

DAC	: Dynamic DAC curve can be Digitally plotted (Smooth parabolic curve) on screen with selectable additional offset curves from 0 to 14 db in 0.1db selectable steps. DAC curve can be plotted using minimum 2 to maximum 10 points.
TCG	: After plotting DAC, TCG (Time Corrected Gain) can be activated for equalizing echo heights.
AWS	: Built-in Software for evaluation of defect in accordance with AWS standards (AWAD1.1/D1.5).
DGS	: Defect size evaluation based on 18 predefined probe data and one custom probe set-up per memory location. Defect size is directly displayed in ERS value. (Equivalent Reflector Size).

Measurements

Digital Read Out	: Thickness/Depth can be displayed in digital readout when using a normal probe and Sound Path, Surface Distance and Depth of echo signals of GATEa / GATEb are directly displayed when angle probe is in use. Measurement point can be selected to be Peak or Flank. Echo height, ERS value, dB diff of DAC/DGS curve to signal height, Echo height with respect to DAC in terms of percentage or in dB can be measured, T-Minimum, Travel distance can be measured when encoder is connected and time of travel during Freerun B-Scan.
Measurement Unit	: Metric or British unit of measurement is selectable.

Communication

IO Port	: Optical Encoder can be connected to da Vinci alpha for positional detail. It can be used for Encoded B-Scan.
Printer Attachment	: USB Printer (PCL3 compatible)
Video Output	: VGA video signal output for connecting to monitor/LCD projector.
Software	: dVaSoft Interface software for transferring A-Scan/B-Scan/T-LOG from da Vinci alpha to PC is supplied as standard equipment. It also creates sequential, 2D and 3D configured files for thickness logging.

Display

Screen	: High brightness Color TFT LCD Display. Display area 320 x 240 pixel (117 x 88 mm). Five different colors and Grid scheme options. Color leg facility for angle probe for easy interpretation of skip distance
Full Screen	: By pressing Enter Key for a few seconds A-Scan can be displayed in Full Screen area.
Reference A-Scan	: Reference A-Scan pattern of standard test object can be saved and recalled in the background for easy comparison during testing.
Freeze/Peak Freeze	: A-Scan freeze, Peak Freeze, Active Echo dynamic available.

Digital

Update Rate	: 60 Hz.
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Power

Power	: Lithium-Ion Battery pack 10.8VDC, 7.8AH, gives 8 hours continuous operation from fully charged battery. Battery with the charge indicator/fuel gauge indicator. da Vinci alpha can also operate on 6 nos. of C type dry cells.
Battery Charger	: Input voltage 100 to 240 VAC / 50 Hz.

General

Temperature	: 0 to 55° C.
Size	: 170 x 260 x 110 mm (HxWxD).
Weight	: 2.1 kg. with Battery.

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Manufactured and Marketed by:

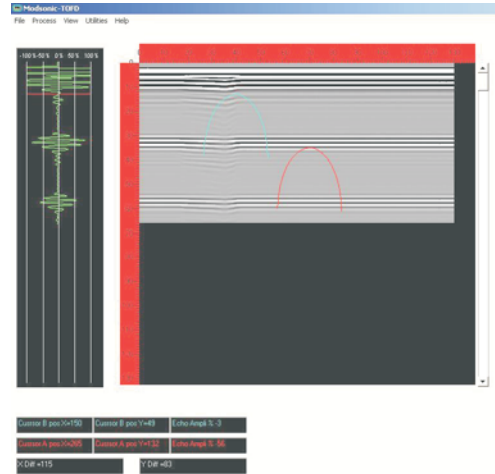


MODSONIC INSTRUMENTS MFG. CO.(P) LTD.

Plot No. 33, Phase III, GIDC Industrial Estate, Naroda, Ahmedabad 382330 INDIA.

Tel: +91 (079) 2281 1217, 2281 3131, 2284 1294 Fax : +91 (079) 2282 0012 Email: modsonic@modsonic.com Website : www.modsonic.com

TOFD



TOFD Specification ('da vinci delta')

- Display** : In Real-time RF A-Scan and TOFD D-Scan. After collecting data, stored data/A-Scan pattern can be reviewed using cursor.
- Recording** : Free Run or with positional encoder for actual location.
- Record Length** : 1000mm test length with collection step of 1mm. Each A-Scan with 500 point depth.
- Data Storage** : Each Scan file is stored in external USB storage device with auto file naming.

Data Analysis Software features

- ✦ For improvement of near and far surface resolution lateral and Backwall echo can be removed.
- ✦ TOFD data linearization.
- ✦ Straightening of TOFD data using apex matching technique or by manually shifting of A-Scan is possible.
- ✦ Contrast setting of D-Scan image is possible for easy interpretation.
- ✦ Defect marking on D-Scan image.
- ✦ D-Scan data zooming control.
- ✦ All A-Scan data can be exported to Excel for further analysis.
- ✦ Multiple file joining and splitting of file is possible.

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