

da Vinci delta

ULTRASONIC FLAW DETECTOR

Salient Features

- ▶ IP67 sealing compliance.
- ▶ Test Range: 2.5mm to 10 meters. (Steel)
- ▶ Measurement resolution of 0.01mm.
- ▶ Auto Calibration / Two point calibration.
- ▶ Through Coat thickness measurement.
- ▶ Dynamic DAC, TCG, DGS/AVG features and AWS software.
- ▶ Tuned amplifier for better performance.
- ▶ Probe frequency up-to 20MHz for testing on low thickness and better sensitivity.
- ▶ Encoded B-scan and C-scan for imaging are available.
- ▶ PRF value can be reduced to 4Hz for large test objects to avoid phantom echoes.
- ▶ Frequency down to 250 KHz (0.25 MHz) for checking composites and highly attenuative material.
- ▶ RF display for better measurement accuracy and FLAW characterization.
- ▶ High-end Ultrasonic imaging for corrosion mapping and TOFD for replacing radiography testing.
- ▶ Flash drive up to 8GB and USB port for Communication.



Specification of 'da Vinci' delta

- Test Range : 2.5mm to 10 meter (0.100 in to 400 in) (longitudinal waves in steel).
Fine mode is adjustable in minimum step of 0.01mm (0.001in).
- Velocity : 1000 met. /sec to 15000 met. /sec (40 in/millisecond to 600 in/millisecond).
In Hot key mode it has pre-set values. Fine mode it is adjustable in step of 1met/sec.(1in/millisecond).
- Delay : Variable from -10 to 2000mm (-0.3 to 30 inches).
- Gain : 100 dB 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 rectified, Half wave - ve, Half wave + ve, and RF mode.
- Frequency : It has tuned amplifier with four bands: a) 0.2MHz to 1MHz b) 0.5MHz to 4MHz c) 0.8MHz to 8MHz d) 2MHz to 20MHz
- Linearity : Vertical $\pm 3\%$ Horizontal: $\pm 0.5\%$.
- Deviation
- Test Modes : Pulse echo and Transmit/Receive.
- Transmitter : Transmission pulse negative spikes. (Pulse rise time <10 ns) and with Selectable high (300 Vp) or low (250 Vp) power.
- Damping : Damping high/low is selectable. (High= 45Ω , Low= 345Ω).
- Connectors : BNC or LEMO size-1 factory optional
- Freeze/
Peak Freeze : A-scan Freeze, Peak freeze, echo dynamic balance available. In peak freeze it holds peak amplitude pattern which is useful for angle beam probing to locate peak signal.
- Monitor : Dual gate with threshold adjustable in 1% of the screen height with +ve/-ve, Gate expand Interface trigger modes.
- Gate Expand : expands range to width of the gate.
- A-scan
Memory : 500 trace patterns can be stored which can be recalled, printed, or transferred to PC via USB (with NOTE/DETAIL). Unlimited No of A-scan can be directly stored in USB disk with auto file naming.
- B-scan
Memory : 50 B-scan 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.
- Calibration
Set-up : 50 different calibration set-ups can be stored and recalled.
- T-LOG : 20000 reading can be stored in 20 different files. Five different types of file templates for file creation. Sored reading can be transferred to PC via USB.
- 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 set as a flow monitor gate. DAC curve can be plotted using minimum 2 to maximum 10 points.

TCG : After plotting DAC , TCG(Time corrected Gain) can be activated. This brings All echo signals to equal height irrespective of depth.

AWS : Built-in Software for evaluation of defect in accordance with AWS standard.

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).

Digital Readout : 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 scan be selected to be peak or flank. Echo height, ERS value, dB diff of DAC/DGS curve to signal height, Echo height 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 : Metric or British unit of measurement is selectable.

Unit

Software : dVaSoft Interface software for transferring A-scan / B-scan/ T-LOG from da Vinci to PC is supplied with da Vinci delta.

Printer Attachment : USB printer (PCL3 compatible) can be directly attached to da Vinci delta for printing of stored A-scan waveform with calibration data and note detail.

Display : High brightness active matrix colour TFT LCD display. Display area 320×240 Pixel (117×88mm). Five different colours and Grid scheme options. colour leg facility for angle probe for easy interpretation of skip distance.

Full Screen : By pressing enter key for a few seconds A-scan will be displayed in Full screen area.

Reference A-Scan : Reference A-Scan pattern of standard test object can be saved and recalled in background for easy comparison during testing.

Video Output : VGA video signal output for monitor/projector connection.

PRF : 4Hz TO 500Hz. Selection in 10 scalable steps. PRF can go down up to 4Hz When PRF is selected to 1 and maximum achievable coupled to range when PRF is selected to 10.

Update Rate : 60Hz

Color coded B-scan : In real time display color coded B-scan as well as live display A-scan. captured B-scan gets stored in external USB pen drive.

TOFD Display : In real-time RF A-scan and TOFD D-scan. After collecting data, stored data or A-scan pattern can be reviewed using cursor.

Recording : Free run or with positional encoder for actual location.

Record : 1000mm test length with collection step of 1mm. Each A-scan with

Length : 500 point depth.
I/O port : Optical encoder can be connected to 'da Vinci 'delta for positional detail.
It can be used for Encoded B-scan.
Data Storage : Each Scan file is stored in external USB storage device with auto file naming.
Power : Lithium-Ion battery pack 10.8 VDC, 7.8 AH, gives 8 hours continuous
Operation from fully charged battery. Battery with the charge indicator/fuel
gauge indicator. da Vinci delta can also operate on 6 nos of C type dry cells.
Battery : Input volt 100 to 240VAC / 50 Hz.
Charger
Temperature : 0 to 55°C.
Size : 170×260×110mm (H×W×D).
Weight : 2.1Kg with battery.

TOFD 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 can be exported to excel for further analysis.
- Multiple file joining and splitting if file is possible.

Conceived, Designed, Developed and Manufactured by;



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