TD FOCUS-SCAN - Multi-Function Ultrasonic Inspection Systems

Features

- Portable yet Powerful
- Extensive Analysis Tools
- Powerful Reporting Functions
- On-board 2-axis Drive Motor Control
- Import Phased Array Setups from ES BeamTool®
- User Replaceable Batteries (hot swappable)
- Up to 64/128 Phased Array
- x 16 Conventional Channels
- 2 Axis Encoder, video Tracking
- Simultaneous PA, ToFD and/or PE data collection
- 128GB SSD Storage

Techniques

- Phased Array
- ToFD
- Pulse Echo
- Corrosion Mapping
- Weld Zone Discrimination

Applications

- Pressure Vessels Welds
- Pipeline Welds
- Structural Welds
- Forgings & Castings
- Turbine Disks & Blades
- Aircraft Components
- Complex Geometries
- Hydrogen Damage Surveys
- Corrosion Surveys

Software

- Phased Array/Pulse Echo
- ToFD
- Strip-Scan
- Long Range (Creep Wave & Corrosion Mapping)
- TD Super-View
- ES BeamTool® included

E&OE - All specifications are subject to change. It is advisable to check all information provided.

TECHNOLOGY DESIGN

NOVA INSTRUMENTS

Hardware

System Options

64/32	64 Elements, 32 Active, 16 Conventional
128/16/16	128 Elements, 16 Active, 16 Conventional
128/32/16	128 Elements, 32 Active, 16 Conventional
128/64/16	128 Elements, 64 Active, 16 Conventional

General

Number Of Elements	Up to 128 Elements + 16 Conventional
Number Of Active Channels	Up to 128
Number Of Focal Laws	2000
Dynamic Depth Focusing	Yes

Digitisation

A/D Sampling Frequency	Phased Array = 14Bit @ 100MHz
	Conventional = 14Bit @ 200MHz
System Bandwidth	(-3dB) Phased Array = 0.25MHz to 25MHz
	Conventional = 0.25MHz to 50MHz
Pulse Repetition Frequency	Up to 10KHz

Pulser

Number of Pulsers	16 /32 / 64 / 128
Number of Active Pulsers	1 to 128
Pulser Delays	0us to 20us in 2.5nS steps
Output Impedance	6 Ohms
HT Pulse Shape	Negative square wave
HT Pulse Voltage	Phased Array = 50 to 200V in 5V Steps
	Conventional = 50 to 200V in 5V steps
HT Pulse Width Range	20ns to 500ns in 2.5nS steps
Rise/fall time	< 5nS

Receiver

Number Of Receivers	16 / 32 / 64 / 128
Number Of Active Receivers	1 to 128
Receiver Delays	0us to 20/40μs in 1nS steps
Signal Bandwidth (-3dB)	Phased Array = 0.25MHz -25MHz
	Conventional = 0.25MHz -50MHz
Gain Range	0dB to 100dB's controllable in 0.1dB steps
Gain Linearity	0.5dB (typical)
Input Impedance	50 Ohms

Time Corrected Gain (TCG)

Number Of Curves	1 to 8 or Per Focal Law
Gain Range	0 to 80dB in 0.1dB steps
Rate Of Gain Change	Up to 40dB/μs

A-Scan Digitisation

A-Scan Points Per Channel	8000
Sampling delay	0 -10ms, in 10ns steps @ 100MHz sampling rate
Number Of Gates Per Channel	3 Hardware Gates
Gate Reference Points	Transmit Pulse or Material Interface Echo
Storage Modes Per Gate	A-Scans, Peak Depth and Amplitude

Signal Averaging

Number Of Channels	All
Averaging Performance	100 million points per second
Averaging Rates	Real-time averaging 1-256, user definable

Peak Processing

Peak Storage Modes	All Peaks, First Peak, Largest Peak/s, Loss Of Signal
Thickness Measurement Modes	Thinnest/Thickest/Between Peaks
Threshold Setup	5 to 100% in 1% steps per hardware Gate
Number Of Peaks Per Gate	16

Scanner Interface Ports

Input Type	Encoder, Potentiometer, Video Camera
Number Of Axis	2 TTL compatible
Number Of Limit Inputs	4, TTL compatible
Encoder Interface	TTL compatible, 5V @ 1A, 12V @ 0.4A
Potentiometer Interface	0 to 2.5V, sampled at 100Hz
Video Input	1Vpp Composite

Motor Drive (Internal)

Motor Types	DC Servo, 12Volts or 24Volts
Current Drive	4 Amps Continuous; 5 Amps Peak
Current Limit	Software definable

PC (Internal)

Operating System	Windows 7
Processor	Intel Celeronm
Memory	2GByte
TFT Display Resolution	1024 x 768
Storage SSD	128GBytes
Display	Colour TFT 10.4"
Ports	4 x USB, 1 x 10/100 Ethernet, 1 x Video

Size, Weight & Environmental

Unit Dimensions	360mm x 300mm x 86mm
Weight	7Kg
Temperature	0ºC to 40ºC operating, -25ºC to 85ºC storage

Power Requirements

DC Input	24VDC @ 10 Amps
AC Input	90 to 260VAC @ 40 to 60Hz
Batteries	2 x Hot Swappable

3rd Party Software

AVG
ESBeamTool® (Eclipse Scientific)

Software

General Features

- Simultaneous Phased Array, ToFD & Pulse Echo data collection
- Operator definable weld geometry overlays
- Real-time A, B, C and D-Scan images, with user defined display modes
- Internal report generation including interactive print-preview & user-definable report fields
- Full cursor analysis indicating peak depth, amplitude and x,y position
- Export Bitmap images to any Windows application
- 8 or 14 bit Data collection (Phased array/Pulse Echo/ToFD)
- Import ESBeamTool® setups

Phased Array

- User configurable control of beam angle, focal distance and spot size
- Fixed-angle electronic or sectorial scans
- Dynamic Depth Focusing (DDF) provides a user-definable focal range
- 2000 Focal laws
- Supports linear probe/wedge geometry
- Normalisation of amplitude across sectorial scan angles or fixed angle focal laws
- Beam Apodization
- Skip Correction provides correct depth/range relationship for multiple legs

Pulse Echo

- Independent control of transmit and receive parameters
- C-scan with end views for corrosion mapping
- Trigger reference modes including Interface Echo or Tx Pulse
- Multiple peak data storage modes, including full/selective A-Scan storage

ToFD

- Perform multi-channel TOFD and Pulse Echo inspections simultaneously
- Full suite of image analysis tools for defect/crack sizing
- Real-time multi-channel averaging significantly improves signal quality
- Linearization, Straightening, Synthetic-Aperture-Focusing-Technique (SAFT)
- File utilities include file join, split, reverse, save partial, output data to text file etc.

Weld Zone Discrimination

- Combined TOFD, Time/Amplitude view, Map view, Couplant Check & Go/No-Go in a single pass
- Inspection data displayed as strips indicating weld zones
- Integrated TOFD analysis
- Automated report generator

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