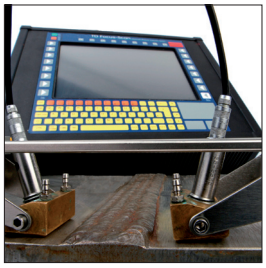
TD Focus-Scan · Portable Multi-Function Ultrasonic Inspection System



Features

- Exceptional Performance
- Exceptional Price
- Portable yet Powerful
- High Speed Real-time Data Collection
- Fast Inspection Speed
- Extensive Analysis Tools
- Easy to Use Menus
- Powerful Reporting Functions
- On-board 2-axis Drive Control
- Includes ES BeamTool®
- Import Phased Array Setups from ES BeamTool®

Applications

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

Techniques

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

Software Options

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

TD Focus-Scan Technical Specification

Hardware

System Options	
64/32/16	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 = 10Bit @ 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 Noise Level	2nV/(Hz) $^{1}/_{2}$ (typical) across full system band width
Input Impedance	50 Ohms

Dynamic Depth Focussing	
Operation	Dynamically optimises receive focus delays
Range Of Operation	User specified depth/range in mm or us
Performance	100MHz real time

Time Corrected Gain (TCG)	
Number Of Curves	1 to 8
Gain Range	0 to 80dB in 0.1dB steps
Rate Of Gain Change	Up to 40dB/µs

Analogue Signal Filtering	
High Pass Filters	(-3dB) 0.25, 0.5, 0.75,1.0, 2.5, 5, 10
Low Pass Filters	(-3dB) 1, 2.5, 5.0, 7.5, 10, 15, 20, 25, 30,35,40,50
Post Rectification Filters	(-3dB) No filter, 1, 2, 3, 4, 5, 6, 7MHz

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 Start/Width	User definable in 10 ns steps
Gate Reference Points	Transmit Pulse or Material Interface Echo
Storage Modes Per Gate	A-Scans, Peak Depth and Amplitude
Data Storage Rates	6MByte/sec

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, Temperature
Number Of Axis	2 TTL compatible
Number Of Limit Inputs	4, TTL compatible
Encoder Interface	TTL compatible, 5V @ 1A, 12V @ 0.4A
Temperature Inputs	RTD. 2 or 4 wire
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	2Amps (Continuous) Up to 4Amps (Peak)
Current Limit	Software definable

PC (Internal)	
Operating System	Windows XP Professional
Processor	Celeron 1GHz
Memory	1GByte
Display Colour	TFT (Industrial type)
TFT Display Resolution	1024 x 768
Hard Disk	80GBytes
Ports	4 x USB, 1 x 10/100 Ethernet, 1 x Video

Size, Weight & Environmental	
Unit Dimensions	360mm x 300mm x 86mm
Weight	7Kg
Rating	IP54
Temperature	0ºC to 40ºC operating, -25ºC to 85ºC storage

Battery Capability	
Operating Time	7 Hours using Phased Array (Typical)
Recharge Time	Up to 5 Hours

Power Requirements	
DC Input	20V to 24VDC @ 40W (Operating), 100W
AC Input	90 to 260VAC @ 40 to 60Hz

ES BeamTool®	
3rd Party Software	Norton Antivirus® ES BeamTool® (Eclipse Scientific

Software

General Features

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

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
- Import ES BeamTool setups

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

- Very fast inspection rates up to 400mm /sec
- 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

- Fast, accurate inspection at up to 200mm/sec
- 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
- Supports internal fixed or rotating head scans using Phased Array or conventional probes
- Perform inspections over km's of pipeline

agr FIELD OPERATIONS

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