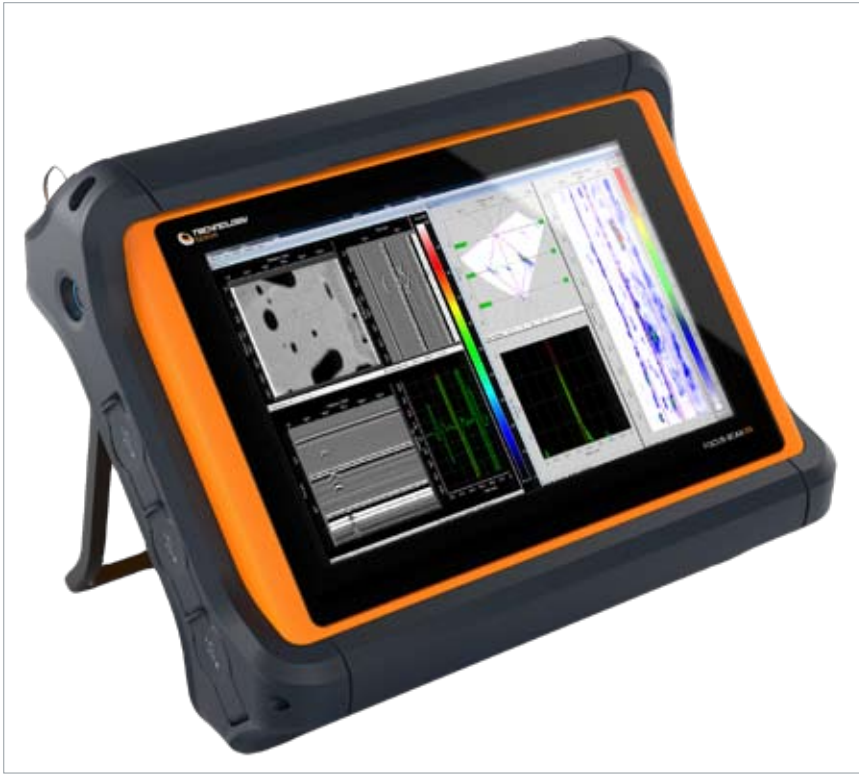# TD FOCUS-SCAN**RX** - Multi-Function Ultrasonic Inspection Systems



## Features

- Extensive On-Board Analysis Tools
- Powerful Reporting Functions
- On-Board 2-axis Motor Control Drive Unit
- Import Phased Array Setups from ESBeamTool®
- User Replaceable Batteries (hot swappable)
- Up to 64/128PR Phased Array
- 8 Independent Conventional Ultrasonic Channels
- 3 Axis Encoding, video tracking
- Simultaneous PA,ToFD and/or PR data collection
- 128GB SSD Storage

## Applications
- Pressure Vessels
- Pipeline Welds
- Composites
- Structural Welds
- Forgings & Castings
- Turbine Disks & Blades
- Aircraft Components
- Hydrogen Damage Surveys
- Corrosion Surveys

## Techniques
- Phased Array
- TOFD
- Pulse Echo
- Corrosion Mapping
- Weld Zone Discrimination
- General Flaw Detection
- 2D Matrix Arrays
- Dual Linear Arrays

## Software
- Phased Array/Pulse Echo
- AWS
- TOFD
- Strip-Scan
- Long Range (Creep Wave & Corrosion Mapping)
- TD Super-View
- ESBeamTool® included
- AVG Antivirus

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

**TECHNOLOGY DESIGN**

**NOVA INSTRUMENTS**

120218 - V5

# TD Focus-Scan**RX** Technical Specification

## Hardware

| System Options | |
|---|---|
| 16/128PR | 16 Active, 128 Elements, 8 Conventional |
| 32/128PR | 32 Active, 128 Elements, 8 Conventional |
| 64/128PR | 64 Active, 128 Elements, 8 Conventional |

| General | |
|---|---|
| Number of Active Channels | Up to 128 |
| Number Of Focal Laws | Up to 1700 |
| Dynamic Depth Focusing | Yes |

| Digitisation | |
|---|---|
| A/D Sampling Frequency | Phased Array = 8Bit & 14Bit @ 100MHz |
| | Conventional = 8Bit & 14Bit @ 100MHz |
| System Bandwidth(-3dB) | Phased Array = 0.25MHz to 25MHz |
| | Conventional = 0.25MHz to 25MHz |
| Max Pulse Repetition Frequency | Variable up to 10KHz |

| Pulser | |
|---|---|
| Pulser Delays | 0µs to 20µs in 2.5ns steps |
| Output Impedance | 6 Ohms |
| HT Pulse Shape | Square wave |
| HT Pulse Voltage | Phased Array = 5 to 190V in 1V Steps |
| | Conventional = 5 to 190V in 1V steps |
| HT Pulse Width Range | 20ns to 500ns in 2.5ns steps |
| Rise/fall time | < 5ns |

| Receiver | |
|---|---|
| Receiver Delays | 0µs to 20µs in 1ns steps |
| Gain Range | P/E = 0 to 90dB in 0.1dB steps, |
| | P/A = 0 to 72dB in 0.1dB steps |
| Input Noise Level | 2.5nV/(Hz) ½ across full system bandwidth |
| Input Impedance | 50 Ohms |

| Dynamic Depth Focusing | |
|---|---|
| Operation | Dynamically optimises receive focus delays |
| Range Of Operation | User specified depth/range in mm or µs |
| Performance | 100MHz real-time |

| Receiver TCG Curves | |
|---|---|
| Number Of Curves | Conventional  - 1 per channel |
| | Phased Array - 1 per Focal Law |

| A-Scan Digitizing | |
|---|---|
| A-Scan Points Per Channel | 8000 samples per channel |
| Number Of Gates Per Channel | 3 overlapping hardware Gates |
| Gate Start/Width | User definable in 40ns steps |
| Gate Reference Points | Transmit Pulse or Material Interface Echo |
| Storage Modes Per Gate | A-Scans, Peak Depth and Amplitude, both |

| Signal Averaging | |
|---|---|
| Number Of Channels | All (128 software channels) |
| Averaging Rates | Real-time averaging 2 - 256, user definable |

| Peak Processing | |
|---|---|
| Peak Storage Modes | All Peaks, First Peak, Largest Peak/s, |
| | Loss of Signal, Between |
| Threshold Setup | 5 to 100% in 1% steps per hardware Gate |
| Number Of Peaks Per Gate | 16 max |

| Scanner Interface Ports | |
|---|---|
| Input Type | Encoder, Video Camera |
| Number of Axis | 2 Axis |
| Encoder Interface | TTL compatible, 5V @ 1A, 12V @ 0.4A |
| Video Input | 1Vpp Composite |
| Motor Drive | 2 Axis (24v, 5 Amps) |

| PC (Internal) | |
|---|---|
| Operating System | Windows® 10 |
| 3rd Party Software | AVG Antivirus® |
| | ESBeamTool® (Eclipse Scientific) |
| Processor | Intel Atom E3827 |
| Memory | 4GB |
| Display | Colour TFT (industrial type) 12.1" |
| Display Resolution | 1280 x 800 (Sunlight Readable Screen) |
| Storage | 128GB SSD |
| Ports | 3 x USB 2.0 |
| | 1 x 10/100/1000 Ethernet, |
| | GPIO |
| | 1 x Video |

| Size, Weight and Environmental | |
|---|---|
| Unit Dimensions | 370 x 294 x 114 (WxHxD) |
| Weight | 7.3kg (1 Battery) |
| Rating | Designed to IP66 |
| Temperature | -10ºC to 40ºC operating / -25ºC to 85ºC storage |

| Power Requirements | |
|---|---|
| Batteries | 2 x Hot Swappable |
| DC Input | 19V |
| AC Input | 90 to 260VAC @ 40Hz to 60Hz |

## 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
- On-Board 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
- 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
- 2D Matrix Arrays
- Dual Linear Arrays

### 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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TECHNOLOGY DESIGN

Technology Design Ltd, a Nova Instruments company.

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