

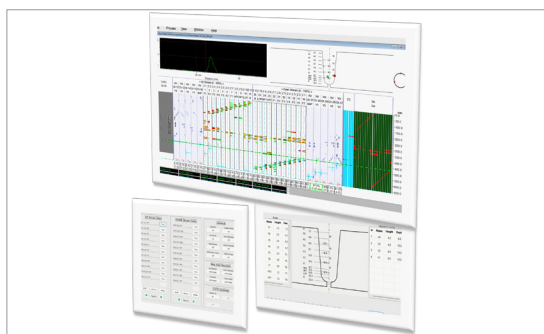


FSRX II Girth Weld Inspection Solution



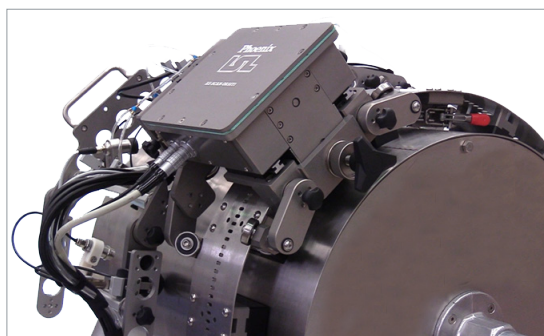
The FocusScan RX II Girth Weld Inspection Solution is a complete ultrasonic inspection system offered as a Turnkey Solution, or Sub-assembly to OEM inspection assemblies for Zonal Girth Weld Inspection.

Contact our sales team to discuss your specific requirement -
Phone: +44 (0) 1606 590123 • Email: tdsales@technologydesign.com



Features

- **FocusScan RX II acquisition unit -**
 - 4 acquisition platforms available:
 - Rack-mounted unit
 - Custom design unit
 - Standard portable unit
 - Bare boards for OEM integration
- **Girth Weld solution software -**
 - **TDScan Advanced Ultrasonic Software**
 - Incorporating stripscan zonal software
 - **ESBeam Tool scan planning software**
 - Incorporating ESBeam Tool Zonal
 - **Training** - Online product familiarisation and zonal setup training
- **Orbital girth weld scanner**
- **M.A.R.S - Modular Accessory Rack Mount System**
 - Optional Rack Mount Ancillary Instruments and Accessories



Benefits

- Turnkey solution for pipeline inspections
- Provides a complete girth weld inspection solution
- Can also be used for diverse applications
- Options to suit a range of budgets
- Scalable, Co-location inspection assembly



Rack Mount FSRX II - Multi-Function Ultrasonic Inspection Systems



The FocusScan RX II is available in a rack mount enclosure for integration into a rack system.

Rack Mount systems offer the flexibility of customising numerous ancillary instruments and accessories into one portable unit.

The Rack Mount FSRX II offers all of the powerful features and functionality of our standard enclosure and can be connected to an external touch-screen monitor.

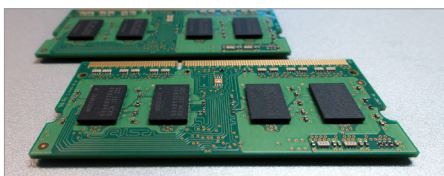
The FocusScan RX II is available in various enclosure options including bare boards, standard enclosure, rack mount and customised cases.

Contact our sales team to discuss your specific custom-fit requirement.



Features

- Powerful Analysis and Reporting Functions
- Import Setups from ESBeamTool®
- 256PR Phased Array
 - 4 x 64 Element IPEX PA Connectors
 - 16 x Independent Conventional UT Connectors
- 128PR Phased Array
 - 2 x 64 Element IPEX PA Connectors
 - 8 x Independent Conventional UT Connectors
- Dual/2D Matrix and Dual Linear Array support
- 2 Axis Encoding, video tracking
- Simultaneous PA, ToFD and/or PE acquisition
- FMC/TFM
- Multi-channel/group data acquisition
- 128GB SSD Storage



Software

- Phased Array/TFM
 - FMC - Full Matrix Capture
 - HMC - Half Matrix Capture
 - Custom
 - Virtual Source - Linear
 - Virtual Source - Swept
 - PWI - Plane Wave Imaging
 - PCI - Phase Coherence Imaging
- TOFD
- Pulse Echo
- AWS compliant
- Strip-Scan (Zonal Discrimination)
- Long Range (Creeping Head Inspection Method corrosion detection)
- TD Super-View
- ESBeamTool® included

Applications

- Pressure Vessels
- Pipeline Girth Welds
- Composites
- Structural Welds
- Forgings & Castings
- Turbine Disks & Blades
- Aircraft Components
- Hydrogen Damage Surveys
- Corrosion Surveys
- HTHA Surveys
- General Flaw Detection

Techniques

- Phased Array
- FMC/TFM
- TOFD
- Pulse Echo
- Corrosion Mapping
- Weld Zone Discrimination



Rack Mount FSRX II - Technical Specification

Hardware

System Options

16/32/64:128PR	Up to 64 Active, 128 Elements, 8 Conventional
16/32/64/128:256PR	Up to 128 Active, 256 Elements, 16 Conventional

General

Number of Active Channels	Up to 128
Number Of Focal Laws	Up to 890
Dynamic Depth Focusing	Yes

Digitisation

A/D Sampling Frequency	Phased Array = 8Bit & 14Bit Conventional = 8Bit & 14Bit
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	0 to 100dB in 0.1dB steps
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
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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 peaks
Threshold Setup	5 to 100% in 1% steps per hardware Gate
Number Of Peaks Per Gate	16 max

FMC/TFM

Data Acquisition mode	Full Matrix Capture, Half Matrix Capture, Custom
Wave Propagation	Any combination of T & L
Amplitude Fidelity	Yes
Encoded TFM	Yes
TFM Data Saving	Yes
TFM Modes	Conventional, PWI, PCI, Virtual Source (Swept, Linear)

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	ESBeamTool® (Eclipse Scientific)
Processor	Intel Atom E3845
Memory	4GB
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	483 x 135.2 x 395.2 (WxHxD)
Weight	5.9kg
Temperature	-10°C to 40°C operating / -25°C to 85°C storage

Power Requirements

DC Input	19V
AC Input	90 to 260VAC @ 40Hz to 60Hz

Software

General Features

- Simultaneous Phased Array, TOFD, Pulse Echo and FMC/TFM 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 acquisition for Phased array, TOFD and Pulse Echo
- Import ESBeamTool® setups

Phased Array

- User configurable control of beam angle, focal distance and spot size
- Linear, Sectorial, Linear spread (Simple & Compound) and Single beam scans
- Dynamic Depth Focusing (DDF) provides a user-definable focal range
- Supports Linear, Dual Linear, 2D Matrix and Dual Matrix probe/wedge geometries
- Amplitude correction across sectorial scan angles or fixed angle focal laws
- Skip Correction provides correct depth/range relationship for multiple legs

FMC/TFM

- Integrated with TDSan
- Envelope processing
- Multi-channel/group data acquisition
- Multi-mode data processing (Conventional, PWI, PCI, Virtual Source Swept & Linear)
- Amplitude fidelity configurator

ToFD

- Perform multi-channel TOFD, Phased Array, FMC/TFM and Pulse Echo inspections simultaneously
- Full suite of image analysis tools for defect/crack sizing
- Real-time multi-channel averaging significantly improves signal quality
- Linearisation, Straightening, SAFT, Parabolic cursors
- File utilities include file join/split, reverse, save partial, output data to text file etc

Pulse Echo

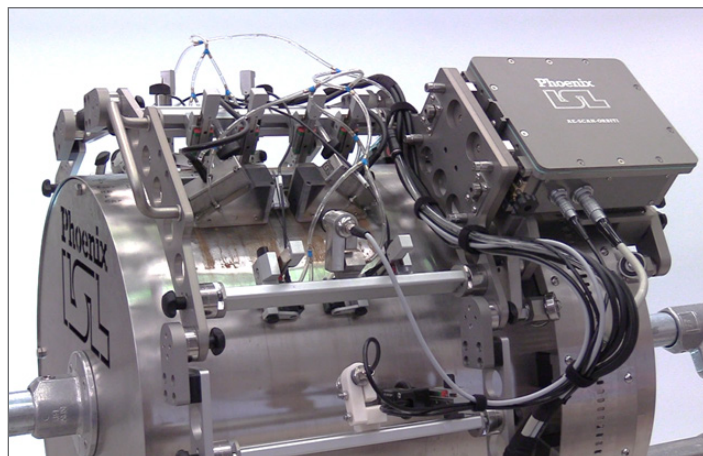
- Independent control of transmit and receive parameters
- C-scan with end/side views for corrosion mapping
- Trigger reference modes including Interface Echo or Tx Pulse
- Multiple peak data storage modes, including full/selective A-Scan storage

Weld Zone Discrimination

- Combined TOFD, Time/Amplitude view, Map, Couplant Check, Go/No-Go and Weld overlay views in a single pass
- Inspection data displayed as strip-charts indicating weld zones
- Integrated TOFD analysis
- Automated report generator with acceptance configurator
- Zoned weld overlay display
- Scan progress indicator
- Conventional B, C and TFM display for additional channels



Orbital AUT Weld Scanner



Orbital scanner on 20" OD pipe with 2x PA, 2x TOFD and 4x transverse UT probes, HD Camera and Surface temperature monitor.

Benefits

- **Versatile:** OD Pipe weld inspection 10" upwards
ID Pipe weld inspection 44" upwards
Tank and Vessel weld inspection
- **Compatible:** Acquisition Unit can be mounted directly to the carriage or stand-alone. Rack mounting option also available
- **Dynamic:** Adheres to surface using 360° tension track mount
- **User-Friendly:** Lightweight components for easy set-up with one operator
- **Powerful:** Scanning speed up to 60mm/s

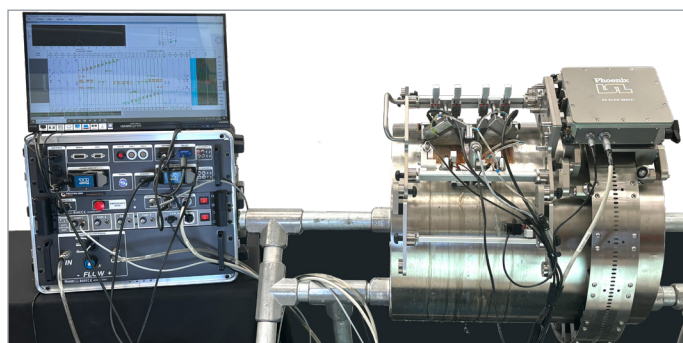
Orbital is a powerful and versatile flexible track mounted scanner capable of transporting a range of onboard accessories to simplify site inspections.

A highly efficient automated ultrasonic testing (AUT) solution for ID and OD pipe weld inspections, through to flat on any material.

Orbital comprises an automated carriage with tracks that can adhere to any inspection surface via fully enveloping tension, magnets or vacuum providing versatility with just one scanning solution. The track can be used on pipes in any orientation on either the outside (10" - Flat) or the inside (44" upwards).

The incorporated probe pan is configurable to your inspection requirement and capable of holding either a single UT probe up to a maximum of 12 probes simultaneously (diameter dependant).

In addition to the demountable multi-probe frame, additional hardware may be mounted such as an onboard TD acquisition unit, HD camera, surface temperature monitor and lighting. This combination of onboard solutions can provide a live visual assessment for the most precise and efficient defect detection and data acquisition.





Orbital AUT Weld Scanner - Technical Specification

Features

Orbital Scanner - Carriage

Dimensions (mm) W x L x H	330 x 307 x 176
Mass (kg)	7.4
Max Payload (kg)	20
Max Scanning Speed (mm/s) conditions dependent	Min = 0, Max = 60
IP Rating	IP65
Operating Temperature (°C)	Min = -10, Max = 50
Operating Humidity (%)	10-90
Power Requirements	90 - 260 V AC, 50 - 60 Hz

Orbital Scanner - 20" OD Track

Track Material	316 SS
Track Foot Material	Delrin
Straight Track Length (mm)	1915
Standoff Height (mm)	~50

Orbital Scanner - Umbilical

Length (m)	5, 10, 20, 30
Recommended Content	2 x Phased Array 8 x Conventional UT (Lemo 00) 1 x Couplant Tube
Wrapped	Various wraps available

Orbital Scanner - Probe Pan

Dimensions (mm) W x L x H	348 x 383 x 142
Unladen Mass (kg)	1.9
Axial Stroke (mm)	~250
Radial Stroke (mm)	65

Orbital Scanner - Probe Pan Extra Wing

Dimensions (mm) W x L x H	354 x 201 x 40
Unladen Mass (kg)	0.7
Axial Stroke (mm)	~250

Accessories

- HD Camera
- Surface Temperature Monitor
- Lighting
- GPS
- Vacuum Track
- Magnetic Track
- Phased Array Probes & Wedges
- TOFD Probes & Wedges
- Automated SSW Transverse Probes

Kit

- 1 x Flexible tension track to suit 10" OD pipe - Flat
- 1 x Orbital Scanner Carriage
- 1 x Probe Pan (configureable to inspection requirement)
- 2 x Probe Pan Wings
- 1x Umbilical (various lengths available)
- 1x Orbital Scanner Drive Controller
- Optional probes, Sensors and Cameras



M.A.R.S - Modular Accessory Rack System



MARS Custom-Design Midi Rack System with Rack Mount FSRX II, Couplant Delivery System, Motor Controller and High Definition CCTV capture and lighting control.

M.A.R.S is a modular accessory rack system offering flexibility to customise numerous ancillary instruments and accessories into one convenient portable unit.

Custom-design units that have been developed and manufactured include a Couplant Delivery System, Motor Controller, Pneumatic Air Supply, Power Supply, CCTV Capture and Lighting Control.

Each module produced offers all of the powerful features and functionality of a standard enclosure solution reconfigured to be incorporated in to a rack mount or customised enclosure.

See overleaf for examples of units produced.

Contact our Sales team to discuss your specific rack mount modular accessory requirements -

- Phone: +44 (0) 1606 590123
- Email: tdsales@technologydesign.com



MARS Rack Mount FSRX II acquisition unit in transport case enclosure



MARS Midi Rack Mount System is the ideal portable unit for site inspections.



M.A.R.S - Modular Accessory Rack Systems - Unit Options

Rack Mount FSRX II Acquisition Unit



M.A.R.S system can accommodate and interface with the Rack Mount FSRXII data acquisition unit.

CDS 2 - Couplant Delivery System



CDS 2 is an efficient couplant delivery system for ultrasonic NDT scanning solutions, configured in a compact enclosure for integration into the M.A.R.S rack mount system.

Water or low-viscosity non-corrosive oils are pumped at high pressure with a low flow rate to effectively couple transducers to the inspection surface.

Motor Control System



A powerful motor control system for use with the Orbital scanner, configured in a compact enclosure for integration into the M.A.R.S rack mount system.

Quad Channel Video Capture



A unit capable of capturing video footage from four HD cameras which are typically mounted on an AUT pipe weld scanner.

The Video Capture Unit receives the video feed and encodes the footage into a video stream to display on a monitor screen with an optional recording facility.

Pneumatic Control System



Pneumatic supply to convert and condition on-site air supply for the attachment of tracks to non-ferrous inspection surfaces. Suitable for use with track mounted scanners.