ScanMaster
Ultrasonic Inspection Solutions

Squirter based Inspection systems

The extensive use of composite materials structures is dictating an increasing need for adequate, reliable, high throughput inspection systems.

Structural parts can be scanned using various configurations of squirter systems, in both pulse-echo and thru transmission modes. ScanMaster squriter systems are designed to inspect a wide range of aerospace structures, from flat panels to complex curvature parts. Both conventional, high penetration UT and phased array technologies are available.

Supported Scanner Configurations

- Travelling bridge type scanners are suitable for inspection of single curvature parts (one bridge systems) or double curvature parts (two bridge systems). This configuration requires minimal floor space and permits use of a turntable for high throughput inspection of round structures. A removable immersion tank can be provided as required.
- Dual tower scanners are appropriate for scanning complex double curvature parts. A removable immersion system can also be provided in this configuration.
- Flatbed systems are used for inspection of flat parts or parts of moderate curvature. These scanners are usually equipped with multiple squirters for productivity enhancement.

Travelling bridges scanner

Dual tower scanner

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Features and Benefits

Fully integrated systems: All system components are designed, manufactured and tested by ScanMaster, ensuring smooth, reliable operation of the system as a whole

- Scanning speeds of up to 1,000 mm/second
- Simultaneous inspection in through transmission and pulse echo modes
- Simultaneous inspection with linear and logarithmic amplifiers
- Dual squirter, dual frequency features for high throughput
- Easy part programming through intuitive Teach In tools, including import of CAD files such as CATIA
- Advanced image analysis and processing tools
- Adherence to Airbus and Boeing requirements
- Packaged water systems with active flaw control, including storage, filtration and UV treatment
- Optional turntable and part fixtures
- Optional removable immersion tank (gantry and dual tower configurations)

Flatbed scanner

Dual tower scanner with mobile immersion tank

Dual bridge scanner

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LS-200 PA – A Fully Integrated Phased Array and Conventional Ultrasonic Scanner

Engine disks are important components of turbine based jet engines. However, the stringent requirements of their ultrasonic inspection standards take a significant toll on manufacturing time.
One way of reducing inspection time is implementing the phased array ultrasonic inspection technique as part of the inspection plan.

ScanMaster is now introducing the LS-200 PA, a fully integrated phased array and conventional UT based immersion scanner for inspection of engine disks.
The LS-200 PA system significantly increases inspection productivity while maintaining highest detection and evaluation capabilities.

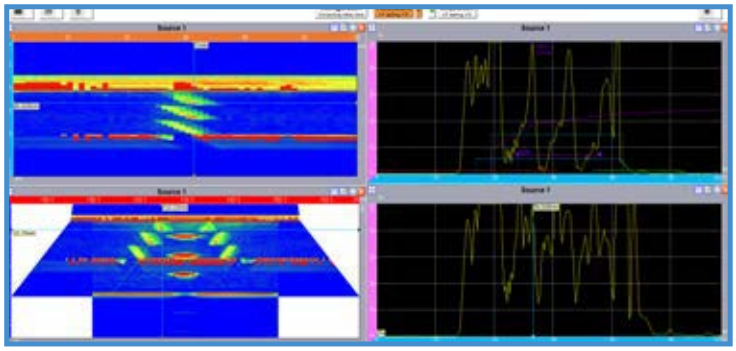
The LS-200 PA is based on the standard LS-200 Series scanner, which is equipped with a state-of-the-art fully parallel phased array instrument supporting linear, annular and matrix transducers, as well as a conventional high performance UT instrument.

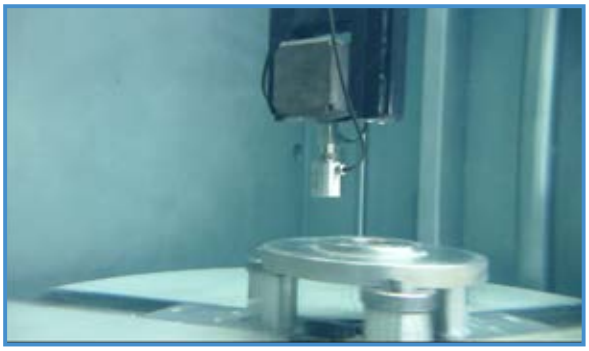
The phased array and conventional transducers are directly connected to the standard gimbal-gimbal probe manipulator, and the system can be switched from phased array ultrasonic to conventional UT in a matter of minutes.

These UT technologies are fully integrated within an application-oriented version of ScanMaster's CSI (C-scan Imaging) software, supporting both conventional and phased array UT.

Phased array and conventional UT share the same scan definitions, data presentation and analysis tools, supporting well-established inspection and evaluation procedures.

The new system is able to perform in various UT modes such as multi-zone inspection, "one pass" scanning with different sound beam incident angles (longitudinal and shear waves), and more.





Providing existing systems with new capabilities

A "Phases array kit", which includes a 128-channel phased-array instrument, linear, annular or matrix transducers and application-oriented software can be provided as an add-on to existing LS and DS Series immersion systems, enabling the user to implement conventional and phased array UT on the same system.

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ScanMaster
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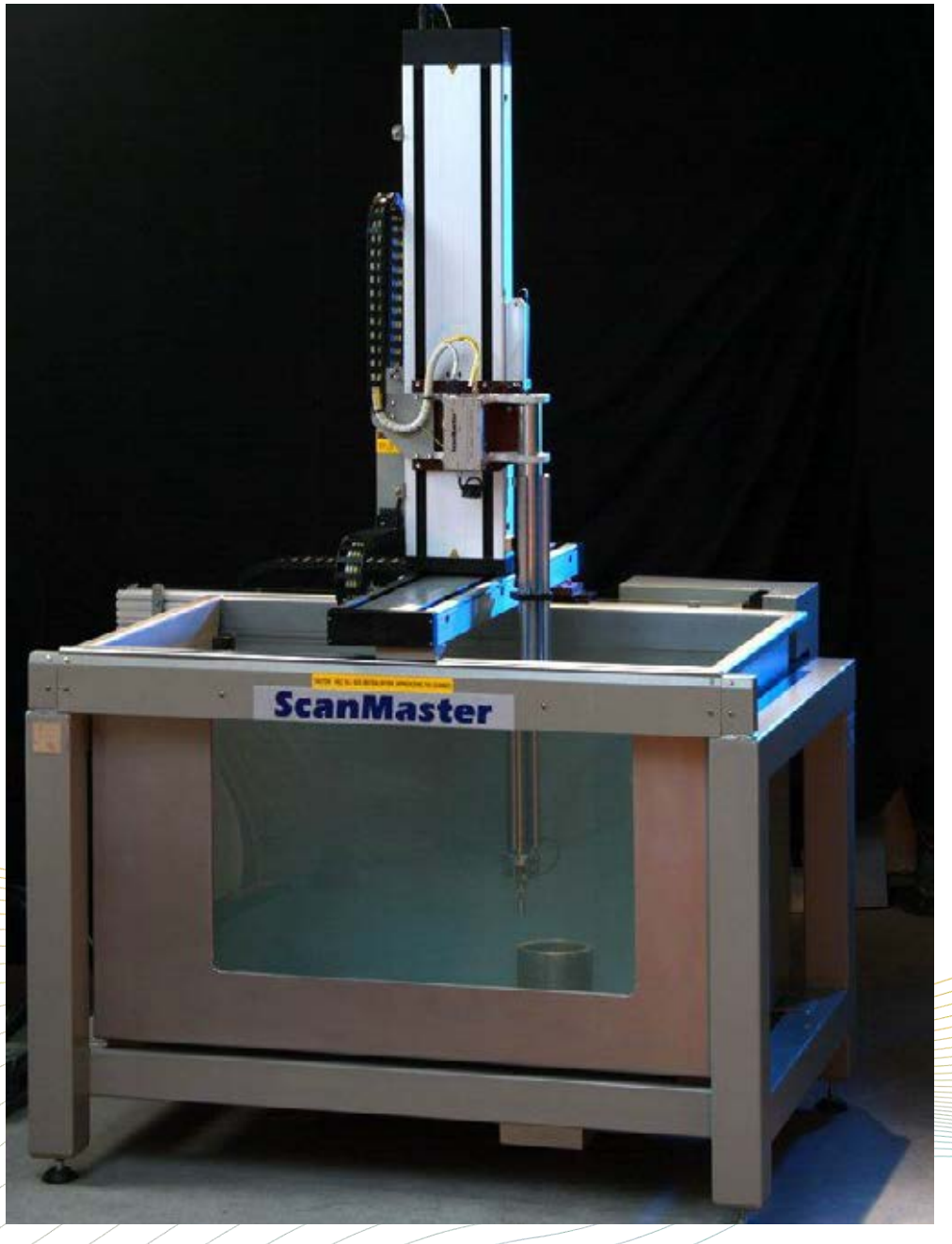
Industrial Ultrasonic Scanning Systems

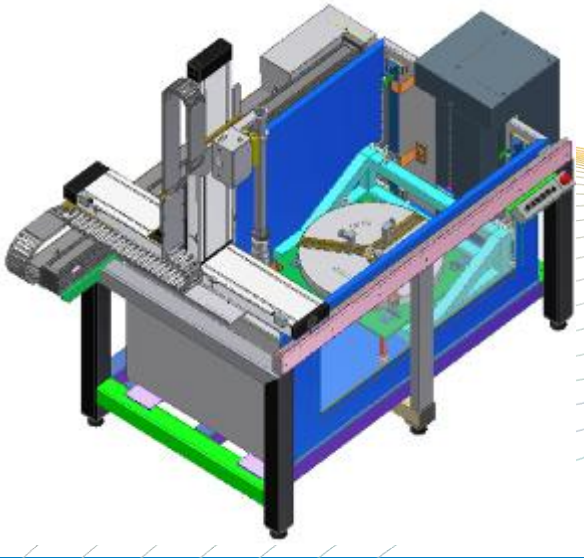
LS-500 Series



High resolution C-scan Imaging systems
for Production and Laboratory Inspection

PRODUCT FEATURES

Fully integrated imaging systems, including ultrasonic electronics, scanning mechanics, data acquisition and process software.
Rugged, reliable systems for multi shift operation in industrial environments.
Optional 2 position lift platform for easy loading and unloading of parts.
Accurate scanning mechanics, with exceptional resolution and repeatability on all axes.
High immunity against electromagnetic noise.
ScanMaster CSI software for Windows XP/7©, with programming in parts coordinates for importing complex part geometry from CAD.
Excellent near-surface flaw resolution and penetration power.
Multiple gate A-scan, B-scan and C-scan imaging with real time view on monitor display.
Unique software functionality increases productivity and reduces scan time.
Extensive real time and post scan data processing and analysis.
Process utilities with automated flaw search, identification and evaluation.
Reporting of inspection and set up results with customized report generation.



PRODUCT DESCRIPTION

The LS-500 series industrial scanners are C-scan inspection machines in modular design **allowing for choice of system scanner length according to requirements with no need for custom design**. Unique robot design allows for precision scanning motion.

Architecture	Each system includes an integrated **usc-100a** ultrasonic instrument with search tube mounted **RPP3** square wave pulsar-preamplifier, precision servo motion control for each axis and ScanMaster software for part set-up, scan, inspection analysis and data archiving.
Sizes	The systems modular design allows for selection of sizes. The length of the X axis can be specified. Sample scanning platforms are: **LS-500-1000** – Motion envelope of (X, Y, Z) 1000mm x 600mm x 600mm (40”x24”x24”) **LS-500LP-1000** – Motion envelope of (X, Y, Z) 900mm x 600mm x 600mm (36”x24”x24”) **LS-500-1500** – Motion envelope of (X, Y, Z) 1500mm x 600mm x 600mm (60”x24”x24”) **LS-500-2000** – Motion envelope of (X, Y, Z) 2000mm x 600mm x 600mm (80”x24”x24”)
Inspection tank	Stainless steel with expansive window, high capacity water conditioning system and water skimmer.
Scanning robot	Rugged modular design. Bridge mounted search tube design for high-speed inspection with tight tolerance limits for accuracy, repeatability and resolution.
Inspection technique	Immersion inspection in pulse-echo mode. Thru transmission mode with range of optional transducer yokes.
Transducer manipulator	Manual A/B adjustment. Optional motorized A/B dual-gimbal manipulator including sealed, direct drive servo motors with low backlash.
Transducers	Any 1-20MHz (1-50MHz optional) immersion type transducer with standard UHF connector.
Parts turntable	Optional high performance turntables with servo drive.
Rated loads	600mm (24”) 150kg (330lb).
Reference standards table	Table up to 500mm x 600mm (20” x 24”), for locating reference standards. Include two 90 degree reference edges.
Ultrasonic hardware	One to sixteen channels usc-100a rack-mount ultrasonic instrument with RPP3 programmable square wave pulsar-preamplifier for each channel.
Operator console	Desktop monitor, keyboard and mouse. Complete system control from system display. Optional remote control device.
SC4-m Motion Control	Servo motion control, with encoder feedback and RF noise suppression circuitry for all axes. Hardware housed in environment-protected cabinet.
Data acquisition	A, B and C-scan imaging software with peak amplitude and TOF measurement and ‘SMART' threshold-based A-scan signal capture.

LS-500 SERIES

Advanced database	CSI software for Windows XP/7©. Part geometry, ultrasonic set-ups, scan plans and scan results are saved in unique and easily managed databases. Relevant geometry, UT set-ups are automatically called up during scan time.
Import geometry	Import part geometry from CAD programs such as Unigraphics and AutoCAD, or from text files.
Import part program	Import part programs from one ScanMaster system to another.
Data analysis and processing	C-scan Data Processing and Analysis Tool Kit. Includes a library of tools for image processing image projection and measurement of flaw size, depth and signal strength.
Documentation tools	Standard documentation tools include: operator annotations on screen customized reporting, A-scan display screen dumps, generation and storage of standard graphical format files such as pcx, bmp or tiff.
System access control	Five levels of programmable authorized access.
Remote data	Optional remote and data processing station connected via LAN to the control console.

PERFORMANCE ENVELOPE

Axis	Motion Envelope	Speed Range	Repeatability	Accuracy	Backlash	Min. Motion
	mm (in)	mm/sec (in/sec)	± mm (in)	± mm/300mm (in/12in)	± mm (in)	mm (in)
X	1000/1500/2000 (40/60/80)	0.1-150 (0.004-6)	≤0.05 (0.002)	0.025 (0.001)	0.1 (0.004)>	0.02 (0.001)
Y	600 (24)	0.1-150 (0.004-6)	≤0.05 (0.002)	0.025 (0.001)	0.1 (0.004)>	0.02 (0.001)
Z	600 (24)	0.1-100 (0.004-4)	≤0.05 (0.002)	0.025 (0.001)	0.1 (0.004)>	0.02 (0.001)

A/B Manual adjustment ± 2 degrees

Optional motorized axes

	deg		deg	±deg/45deg	± deg	deg
A	± 37.5	0.1-20deg/sec	≤0.02	0.03	≤0.02	0.02
B	± 112	0.1-20deg/sec	≤0.02	0.03	≤0.02	0.02
W	360	0.1-30RPM	≤0.03	0.03	≤0.03	0.03

* Specifications are subject to change without notice.

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ScanMaster
Ultrasonic Inspection Solutions

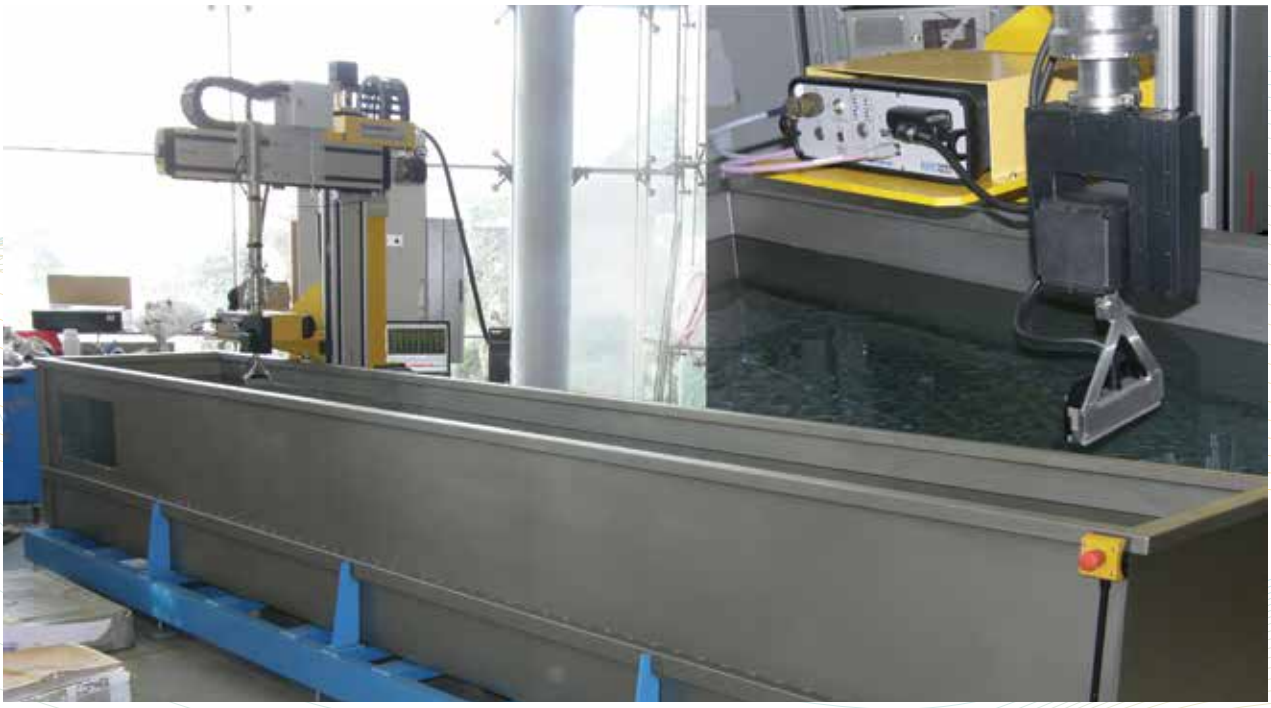
LS-200-COPA – Phased Array Immersion Scanner for Automatic Inspection of Composite Panels, Skins and Stringer Components

The extensive use of glass and carbon fiber composites in manufacturing of modern aerospace components is raising the need for reliable, cost-effective NDT systems for the inspection of such components in the manufacturing stage.

The complexity of the new multilayered parts of complicated geometry with high curvatures and varying thicknesses and the requirement to inspect the parts on a 100% rate are posing serious challenges to such systems.

For example, stringer webs, flanges, edges, radii and chamfers as well as untrimmed part and parts drilled with holes must be completely inspected.

ScanMaster LS-200-COPA immersion scanners provide an efficient, automated solution for the ultrasonic inspection of Carbon and Glass-Fiber-Reinforced Polymer parts, such as skins, stringers, and spars. The inspection is making use of multi-channel ultrasonic phased array (PA) technology, which is well proven for such applications.



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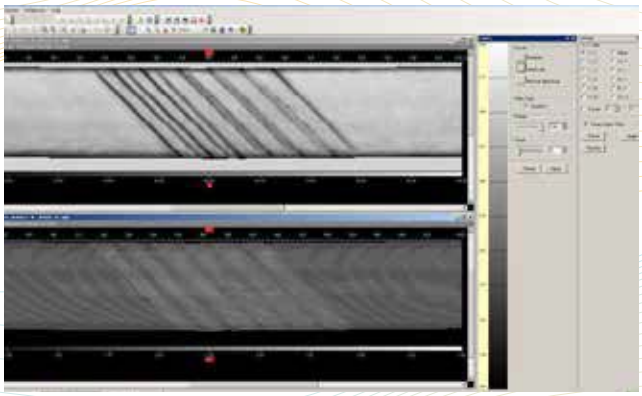
The LS-200-COPA is equipped with a complete set of tools and accessories, including multi-axes gimbal-gimbal/ swivel manipulator, and sophisticated tactile probe wedges specifically designed for inspection of CFRP flat and curved parts, which together with 3D surface following software and multiaxes encoding capabilities enable the inspection of parts of complex geometry.

These tools and accessories, together with flat and curved linear phased arrays transducers, allow scanning and C-scan imaging (of amplitude and depth) of parts of complex areas, with detection of delaminations and porosity. Such areas can be inspected with or without mechanical surface tracking. The radii inspection can be performed either from the inside or from outside, depending on the accessibility, shape and size.

Features and Benefits

- High flexibility, accommodating automated scanning of diverse parts such as skin, edge, radius and stringer in one system
- Easy part programming, including 3D contour following through intuitive Teach In tools, including import of CAD files
- High productivity
- Full A- Scan and C-scan imaging (2D and 3D)
- Defect representation and sizing in 3D presentation
- Compliance with Airbus and Boeing requirements



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Industrial and Laboratory Ultrasonic Scanning System

LS - 50 SERIES

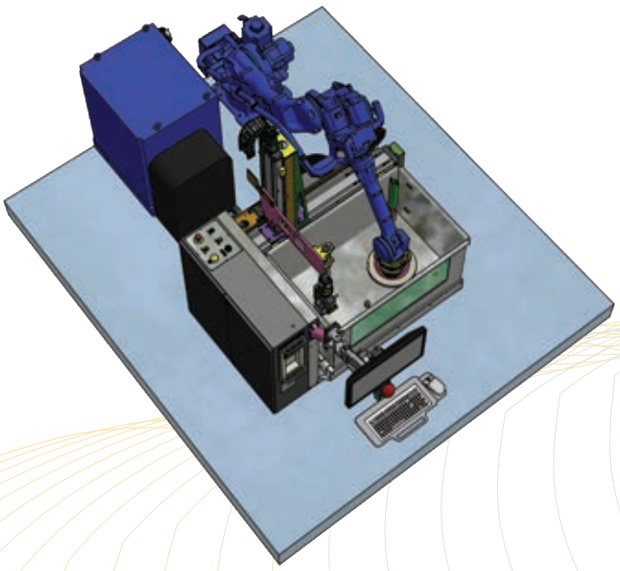
High Resolution C-scan Imaging Systems for Production and Laboratory Inspection

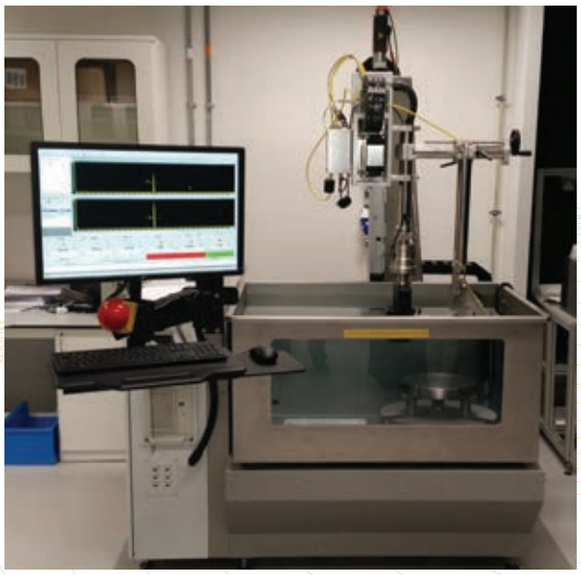
PRODUCT DESCRIPTION

The LS-50 is a **compact, reliable, fully integrated** ultrasonic immersion system that includes scanning mechanics, motion control, electronics, data acquisition and analysis software. This system is an optimal **cost-effective** solution for a variety of applications for inspection of small parts and structures of various geometrical shapes, in **industrial** and **laboratory** environments.

Main Features:

- Accurate scanning mechanics, with exceptional resolution and repeatability on all axes
- High immunity against electromagnetic noise
- Interface for automatic loading/unloading of inspected products by articular robot
- Encoder outputs for connection of external devices, such as phased array or eddy current instruments
- Excellent near-surface flaw resolution and signal-to-noise ratio
- Powerful ScanMaster CSI software for Windows 7©, with part coordinates programming for importing complex part geometry from CAD
- Multiple gate A-scan, B-scan and C-scan imaging with real time view on the monitor display
- Unique software features for increased productivity and user-friendly operation
- Extensive real time and post-scan data processing and analysis with automated flaw search, identification and evaluation
- Export of A-scan and C-scan data for further processing in external applications, such as MatLab and more
- Reporting of inspection and setup results, with customized report generation capability





LS - 50 SERIES

Specifications

Architecture	Includes an integrated usc-100b ultrasonic instrument with search tube-mounted RPP-3 square wave pulser-preamplifier, precision servo motion control for each axis and ScanMaster software for part setup, scanning, inspection analysis and data archiving.
Operator console	Versatile operator station attached to the gantry includes a 24" flat desktop monitor, keyboard and mouse, and easily accessible Emergency Stop button. The system display provides complete system control.
Inspection tank	Stainless steel with expansive window, high capacity compact water conditioning system and water skimmer.
Scanning robot	Rugged modular design. Console-mounted search tube design for high-speed inspection, with tight tolerance limits for accuracy, repeatability and resolution.
Inspection technique	Immersion inspection in pulse-echo mode. Thru transmission mode with a range of optional transducer yokes is available.
Transducer manipulator	Manual or motorized A/B **gimbal-gimbal** manipulator including sealed, direct drive servo motors with low backlash.
Transducers	Immersion type transducers with standard UHF connectors. Frequency up to **20MHz**.
Part rotator	High performance **400mm (16")** turntable or bar rotator with servo drive. Rated load: Up to **80kg (176lb)**.
Reference standards table	Table up to 300mm x 100mm (12" x 4"), for locating reference standards.
Ultrasonic hardware	Multi-channel **usc-100b** rack-mount ultrasonic instrument with UPR-101 ultrasonic board and RPP-3 programmable square wave pulser-preamplifier for each channel.
SC4-M motion control	Servo motion control, with encoder feedback and RF noise suppression circuitry for all axes. Hardware is housed in an environment-protected cabinet.
Data acquisition	**A-, B-** and **C-scan** imaging software with peak amplitude and TOF measurement. Full and Smart (threshold-based) A-scan signal capture.

Advanced database	CSI software for Windows 7©. Part geometry, ultrasonic setups, scan plans and scan results are saved in unique and easily managed databases. Relevant parameters are automatically retrieved during scan time.
Import geometry	Support of part geometry import from **CAD** programs (e.g., Unigraphics, AutoCAD, CATIA) or from text files.
Transfer part program	Ability to transfer part programs from one ScanMaster system to another, regardless of tank size.
Data analysis and processing	C-scan Data Processing and Analysis Tool Kit includes a tool library for image processing and measurement of flaw size, depth and signal strength.
Documentation tools	Standard tools include on-screen annotations, customized reporting, A-scan display screen dumps, and generation / storage of standard graphical files such as .pcx, .bmp and .tiff.
System access control	Five levels of programmable authorized access.
Remote data	Option for a remote data processing station connected to the control console via LAN.

MECHANICAL PERFORMANCE:

Axis	Motion Envelope	Speed Range	Repeatability	Accuracy	Backlash	Min. Motion
	mm (in)	mm/sec (in/sec)	± mm/300mm (in/12in)	± mm/300mm (in/12in)	± mm (in)	mm (in)
X	750 (30)	0.1-150 (0.004-6)	≤0.05 (0.002)	0.025 (0.001)	0.05 (0.002)	0.01 (0.001)
Y	400 (16)	0.1-150 (0.004-6)	≤0.05 (0.002)	0.025 (0.001)	0.05 (0.002)	0.01 (0.001)
Z	450 (18)	0.1-75 (0.004-3)	≤0.05 (0.002)	0.025 (0.001)	0.05 (0.002)	0.01 (0.001)
	deg	deg/sec	deg	±deg/45deg	± deg	± deg
A[1]	± 38	0.1-20deg/sec	≤0.02	0.02	≤0.02	0.01
B[1]	± 112	0.1-20deg/sec	≤0.02	0.02	≤0.02	0.01
C	360	0.1-50RPM	≤0.03	0.03	≤0.03	0.01

[1]Manually adjustable manipulator is available (±2 degrees)

Options:

- Bar rotator for inspection of bars and tubes
- Full integration of phased array capability
- 3D contour following for scanning parts of complex geometry
- Application-tailored multi-transducer probe holder
- Interface to loading/unloading robot for automation of inspection

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ScanMaster
Ultrasonic Inspection Solutions

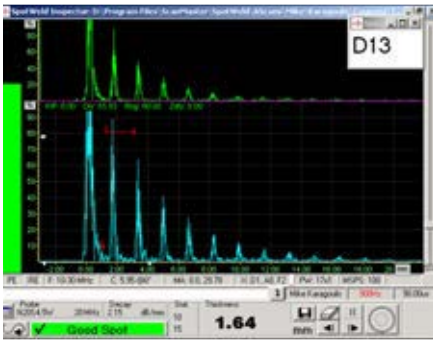
UT/Pro – Integrated Device for SpotWeld Inspection

The UT/Pro is a new integrated rugged inspection solution suited for SpotWeld inspection in industrial environments. Designed to last and built to survive in harsh conditions, the UT/Pro is engineered for continuous operation for over 8 hours. Its touch screen responds even when operators' hands are wet or protected with gloves.

The compact housing of the UT/Pro with an integrated ergonomic handle weigh 2.3 kg, making it ideal for mobile operation. The UT/Pro is fully compatible with the widely-used UT/Mate and its SpotWeld application.

Main Features:

- 8 hours of continuous operation on Windows® 10 Professional
- 2.3 kg
- Hot swap battery solution for extended non-stop operation
- Automatic GO/NO-GO decision making
- Automatic classification of SpotWeld quality
- Real time probe normality and positioning feedback
- Tight control of ultrasonic probe beam size
- Multi-gate capture
- Identification of intermediate peaks
- Support of 2, 3 and 4 plate combinations
- Automatic velocity calculator
- Strong backup-restore function, including automatic scheduler
- Merge feature for adding local changes in the inspection plan
- Network connectivity for data sharing and optional 3rd party data management tools
- Ability to accommodate a virtually unlimited number of inspection set-ups
- Vast A-scan storage capacity using advanced SSD technology for faster and safer data storage
- Wide selection of ScanMaster probe diameters
- Automatic generation of inspection reports, with options for customization



A-Scan automatic classification in test mode

The UT/Pro

UT/Pro Specifications

UT Main Spec.

Analog bandwidth	1 to 45MHz (-6dB)	Memory (RAM)	4GB LPDDR3
Calibrated gain	85dB	Storage	SSD 128GB
Gain step size	0.2dB	Operating system	Windows 10 Pro
Excitation waveform	Negative Square wave	Standards	MIL-STD 810G and IP65 certified
Amplitude	350 V, 8 levels	I/O Interfaces	DC in x 1 USB 3.0 (9-pin) x 1 USB 2.0 (4-pin) x 1 Micro HDMI x 1 Optional Wi-Fi connection
Single pulse width	10-100 nsec, 10 ns resolution		
Screen	Touch, 10.1" IPS FHD LumiBond® 2.0 sunlight display	Power	AC Adapter (65W, 100-240VAC, 50/60Hz) Li-Ion battery (15.2V, 2160mAH) LifeSupport™ hot-swappable battery technology
Optional communication	Wi-Fi, GPS, Bluetooth, 4G LTE		

Remote Control for Main Functions

Power consumption	2.5 W Max.	Humidity	<95% non-condensing
Operating temperature range	5 to 50°C	Dimensions	180mm x 82mm x 25mm (7" x 3.2" x 1") – W X H X D
		Weight	480g (1.06 lb)

* Please contact your nearest ScanMaster representative for an updated list of certified models.

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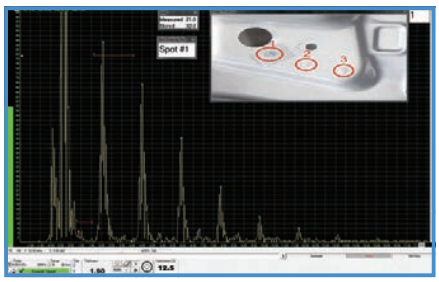
ScanMaster
Ultrasonic Inspection Solutions

UT/Mate - Your Mate for Advanced SpotWeld Inspection

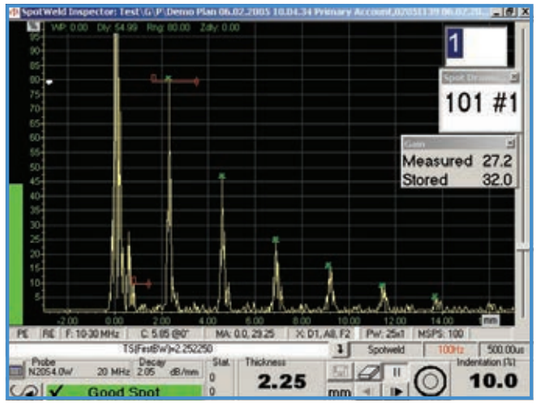
Convert your computer into a powerful UT Instrument
by simply connecting UT/Mate to the USB port

NEW

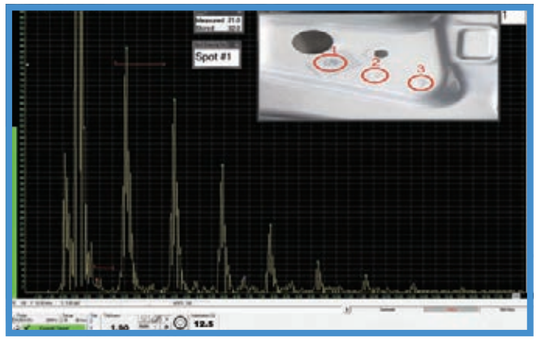
Completely new SpotWeld software with up-to-date advanced features



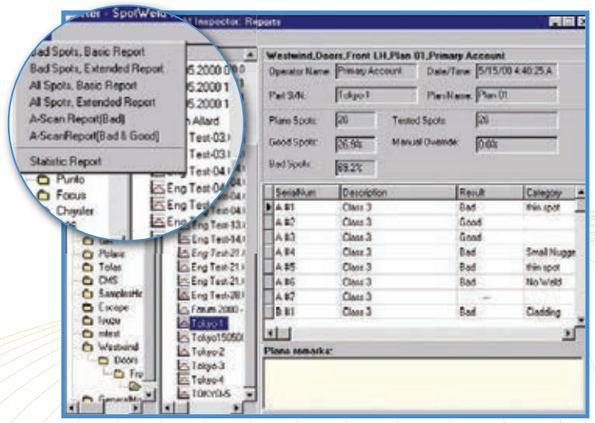
UT/Mate - Highlights



- **Multiple details and controls on the working screen**



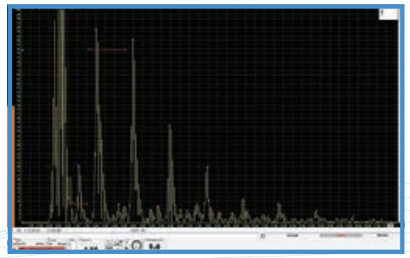
- **Efficient tool for probe centering and perpendicularity monitoring**

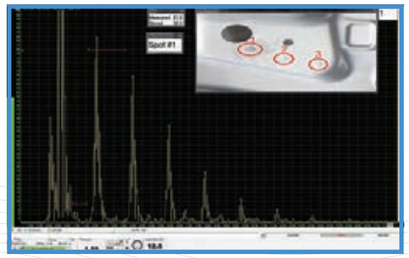


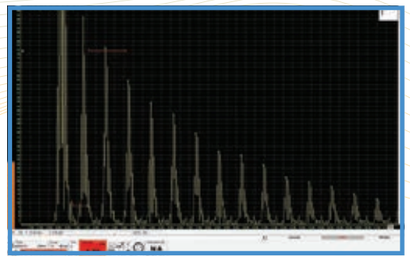
- **Smart and intuitive report generator**
- Quick and easy setup and inspection plan preparation
- Flexible and costumed inspection plans

UT/Mate - Highlights

- Microdot or Lemo transducer connector
- Multi-gate capture
- Identification of intermediate peaks
- Supports 3-plate and 4-plate combination
- Automatic velocity calculator
- Running on Windows XP and Windows 7 computers including 64bit
- Strong Backup and Restore functions including automatic scheduler
- Merge feature for adding local changes in the inspection plan
- Supports ability to open external application from the SpotWeld main menu
- Virtually unlimited A-scan storage capacity
- Data management tool - optional







Specifications

Overall Analog Performance	
Analog bandwidth	1 to 45MHz (-6dB)
Calibrated gain	85dB
Gain step size	0.2dB
Equivalent input noise	<6nV/√Hz
Linearity	±1dB

Channels	
Number of channels	1
Channel triggering	Internal or external

Pulser Characteristics	
Excitation waveform	Square wave
Amplitude	8 levels
Max. pulse amplitude, 50Ω load	350V + 10%
PRF per channel	1 to 1,000Hz
Damping	2 settings
Stability	±2% FSH
Mode	PE, TT
Pulse fall time	<6nsec
Single pulse width	10-100 nsec
Pulse width resolution	1 nsec
Isolation (PE/TT)	> 65dB @ 5MHz

Preamplifier Characteristics	
Programmable gain	0, 15, 30, 45dB

Frequency Filters	
Number and type of filters	4 fixed

Time Base	
Range	100nsec to 1,000µsec
Delay	0 to 1,000 µsec
Resolution	10nsec

Gates	
Number per channel	4 expandable to 32
Range	100 nsec to 1,000µsec
Delay and range	10 nsec to 1,000µsec
Resolution	10nsec
Peak detection	Positive, negative or absolute
Alarm threshold	Positive or negative going
Surface follower	Threshold - based

DAC	
Dynamic range	51dB
Resolution	0.2dB
Range	160nsec – 1msec
Timebase resolution	160nsec
Position resolution	10nsec (first step)
Slew rate	20dB/160nsec

Analog to Digital Conversion	
Resolution	8 bit
Sampling rates	12.5, 25, 50, 100 msps, single shot
High speed buffer	1MByte
Interleave (optional)	200, 400, 800 MSPS

Data Acquisition Speed	
Peak amplitude and time of flight	Up to 10M measurements/sec

Host Computer (minimal requirements)	
Connection	USB 2.0 or 1.1
Processor (CPU)	800MHz
Memory (RAM)	128 MB
Hard drive (HD)	10 GB
Operating system	Windows 2000 / Windows 7

Remote Control for Main Functions	
General	
Power consumption	2.5 W Max.
Operating temperature range	5 to 50°C
Humidity	<95% non-condensing
Dimensions	180mm x 82mm x 25mm (7" x 3.2" x 1") – W X H X D
Weight	480g (1.06 pound)

* Specifications are subject to change without notice.
UT/MATE BROCHURE, MODIFICATIONS RESERVED.
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ScanMaster
Ultrasonic Inspection Solutions

UT/x – SpotWeld Phased-Array Inspector

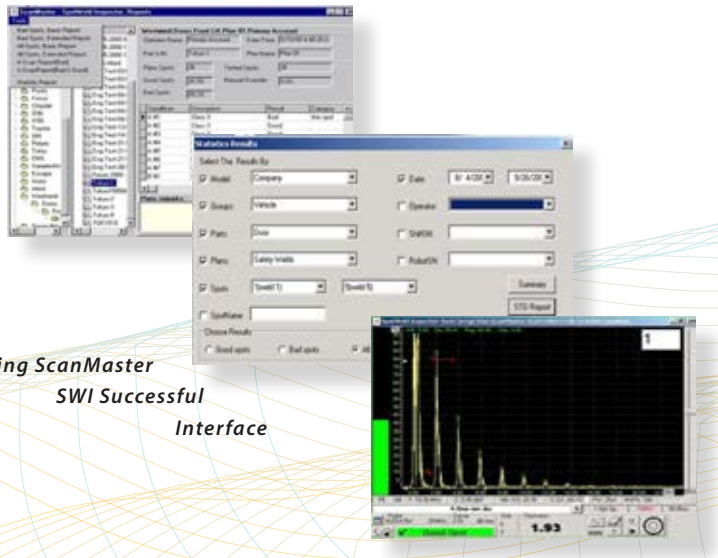
ScanMaster UT/x is the new member in our product offerings for the automotive industry

The Phased Array architecture of **ScanMaster UT/x** offers new capabilities for SpotWeld inspection, including:

- Measure of nugget size
- Measure of nugget area
- Advanced new technology for classification of nugget quality

ScanMaster UT/x provides the following unique combination of advantages:

- Fast and reliable inspection
- Single-element probe and PA probe inspection using the same hardware platform and software
- Efficient scan plan preparation
- Support for the migration of existing ScanMaster plans
- Utilization of ScanMaster's patent-registered unique technology



Existing ScanMaster SWI Successful Interface

*Incorporating many successful features of the existing ScanMaster SWI software (e.g., plan preparation wizards and quick inspection run), **ScanMaster UT/x** has an intuitive, user-friendly interface that allows operators and supervisors to easily access both basic and advanced setups.*

*Backward compatibility ensures that current ScanMaster SpotWeld users can adopt the new solution quickly and cost-effectively by migrating most data to the new **ScanMaster UT/x**.*

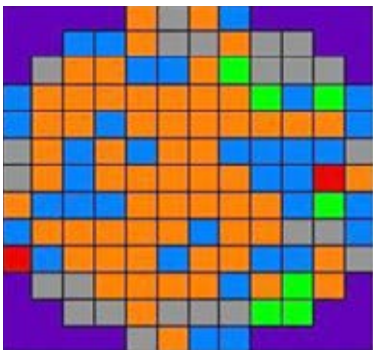
ScanMaster UT/x uses 15 MHz PA matrix transducer incorporating 61 separate elements with a 1mm pitch. It includes a built-in water path for ultimate UT performances and flexible membrane to compensate different weld indentations

ScanMaster PA Probe

Current SpotWeld users will enjoy these additional benefits:

- Similar scan plan-tree structure for quick navigation
- Quick and easy migration of plans to save setup time
- Similar application navigation to minimize the learning curve
- Ability to use an existing ScanMaster SpotWeld single element probe on the same UT/x instrument
- Similar probe handling

Using ScanMaster's field-proven sophisticated algorithm, each single element returns an autonomous measurement and decision during inspection, the information collected from all elements is gathered, and the combined data is integrated into a single automatic decision, with area and diameter measurements.



Thin Weld Indication

Main specifications:

- Driven by M2M's Mantis Portable PA instrument
- Size (L x W x H): 320mm (12.6 in) x 220mm (8.66 in) x 100mm (3.94 in)
- Screen size: 8.4''
- Weight: 4.4 kg (9.7 lb.)
- Battery time: 4 hours (hot swappable battery)
- Number of elements in probe: 61
- Frequency: 15MHz
- *Phased array pulsers*:
  - Negative square pulse, width: 35ns to 1250ns
  - HT voltage: 12V to 90V (with 1V step)
- *Phased array receivers*:
  - Input impedance: 50 Ω
  - Frequency range: 0.4 to 20MHz
  - Max. input signal: 2Vpp
  - Gain: Up to 120dB (0.1dB step)
  - Cross-talk between two channels < 50 dB

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