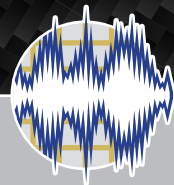




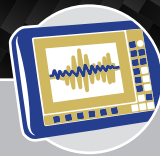
# UT SYSTEMS CATALOG



SYSTEMS



SOFTWARE



INSTRUMENTATION

ULTRASONIC TESTING TECHNOLOGY



## TABLET UT™ SYSTEM

MISTRAS has developed the Tablet UT™, a convenient, portable Ultrasonic Testing (UT) system with the power, functionality, and features of a computer. From that fusion comes unparalleled connectivity and versatility harnessed within an industry-leading 10.4-inch (264.16mm) dynamic touchscreen display. This breed of features and functions puts the Tablet UT™ on the cutting edge of Non-Destructive Testing (NDT) equipment – a position MISTRAS has led since the 1970s.

The Tablet UT™ is a high-speed data acquisition and imaging system that provides full A-, B-, and C-Scan displays, thickness testing and data logging, RF spectrum analysis with waveform storage, Time of Flight Diffraction (TOFD), flaw detection, and corrosion mapping.

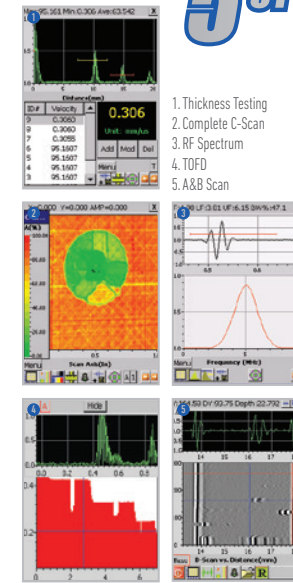
But what sets the Tablet UT™ apart is its on-board image replay and analysis capabilities. Since the Tablet UT™ is both testing system and computer, it has the power and versatility not only to allow users to perform UT testing but also analyze the results seamlessly.

No longer do users have to export data from the testing system to analyze results. Instead, they can remain in the field and perform their image replay analysis, which allows for further examination depending on test results. The Tablet UT™ also comes with up to three-axis motion control with 1, 2, or 3-axis encoder inputs and four-function pulser.

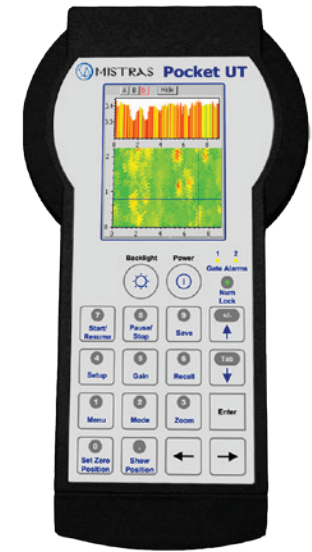
Nor does a user ever have to leave the field to transmit or share test results. Thanks to the Tablet UT's™ Wi-Fi and Bluetooth connectivity, users can wirelessly transmit results and data in real-time. And with Ethernet and two USB outputs, the Tablet UT™ has the versatility, power, and scalability of an industrial computer.

Built on a multi-core platform, the Tablet UT™ runs Microsoft™ Windows 7™ operating system along with UTwin™/Tablet UTwin™, giving it the functionality, personality, and features of a lab computer. It comes with up to 256 GB mSATA of storage and 8GB of operational memory allowing users to store test results and analysis – including RF Waveforms.

## 5 UT Instruments in 1



1. Thickness Testing
2. Complete C-Scan
3. RF Spectrum
4. TOFD
5. A&B Scan



## POCKET UT® SYSTEM

MISTRAS offers the innovative Pocket UT®, a battery-operated, handheld, stand-alone, full C-Scan data acquisition system. Portability and ease of use, coupled with its full A-, B-, and C-Scan capabilities and optional TOFD capability, make the Pocket UT® ideal for on-site inspections. It quickly assesses the presence, depth, shape, and orientation of cracks, flaws, corrosion, erosion, delamination, and internal anomalies.

The system uses the Windows-CE™ operating system and has a bright, back-lit LCD color touchscreen and an easy-to-use keypad. It has a replaceable and rechargeable battery pack and comes with a 100-240 Volt AC/DC adapter/charger. The system includes internal spike, square wave, and tone burst UT pulser/receiver, data acquisition software, motion control hardware and software, signal capture, display, analysis, replay, transfer, or storage. Companion scanners include automated or manual X-Y scanners (using a variety of transducers), or a single-axis RUS Scanner.

### TOP 10 APPLICATIONS FOR POCKET UT®

- Impact damage assessment
- Lightning strike inspection aircraft
- Composite delamination evaluation
- TOFD weld inspection
- Rope access UT inspection
- Boiler tube thickness evaluation
- Flow accelerated corrosion mapping
- EPRI CHECWORKS (nuclear-compatible)
- Gusset plate corrosion assessment
- Rapid pipe wall thickness scans

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Pocket UT™ System

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110-LAN  
USB Solutions: UTC 110 AND 8M

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## IMMERSION SYSTEM ACCESSORIES — 13

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## UT SOFTWARE — 14

UTWin™ Software

TCPWin™ Software

## ABOUT OUR UT SOLUTIONS

MISTRAS Group, Inc. offers a full line of Ultrasonic (UT) products and inspection systems designed to fit the needs of any testing market. From immersion systems and large-scale gantries, to single or multichannel systems, UT boards and software, to system scanners and accessories, MISTRAS' UT solutions fuse the necessary engineering, design, and production capabilities to create a dynamic product line. Those comprehensive offerings embody our mission to be a one-source provider of asset protection solutions.

UT testing measures the propagation of mechanical vibrations (ultrasonic waves) through a material to examine properties, detect discontinuities, measure thickness, determine elasticity, and more. MISTRAS designs and manufactures all major components of our UT solutions in-house. Therefore, we maintain total control over product specifications, pricing, system performance, quality, and customer satisfaction. It also allows us to offer certain custom, made-to-order systems. No matter your industry, testing market, or need, MISTRAS has the UT testing solution.

## ABOUT MISTRAS

MISTRAS Products & Systems Division develops leading-edge technologies and manufactures products for non-destructive testing and predictive maintenance. These technologies include advanced Acoustic Emission, Ultrasonics, Vibration monitoring and resistivity systems.

We combine the skill and experience of our certified technicians, engineers and scientists with our advanced enterprise software and other proprietary product offerings to deliver a comprehensive portfolio of solutions, ranging from routine NDT inspections to complex, plant-wide asset integrity assessment and management solutions. Our enterprise software is at the core of our portfolio as it enables us to integrate all of the NDT solutions we offer.

## MORE INFO

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## REMOTE UT MODULE

13" x 9" x 4.5" • 330 mm x 229 mm x 114 mm

The Remote UT Module is a compact, yet complete, stand-alone Ultrasonic System in a rugged weather-resistant enclosure. It can even be battery operated (optional) when used in conjunction with a portable scanner. It contains a complete, embedded Windows 7™ operating system with several communication interfaces, an Ultrasonic pulser and receiver, a 100 MSPS digitizer, a real-time UT digital signal processor, and up to 3-axis motion controller.

The Remote UT works well with Gantry or large immersion systems when configured as a remote pulser/receiver, and as a digitizer when configured to a host computer. And it can even be configured as a complete UT Flaw detection system that also includes 3-axis motion control, PC & C-Scan software.



## AIR-110

4.7" x 2.9" x 1.5" • 120 mm x 70 mm x 38 mm

The AIR 110 system is a Wi-Fi-enabled, portable, versatile UT system with data acquisition, imaging, and analysis capabilities. The wireless system offers A, B, and C-Scan views, seamlessly interfacing with MISTRAS UTwin and Euroscan software. The system is ideally positioned as a measurement tool for onsite inspections, rope access work, flaw detection and thickness measurements, and OEM applications.

The AIR 110 integrates with any tablet or mobile device, and is compatible with Windows, Linux, and Android. Ready to work in pulse echo or through-transmission mode, the module has a range of 100 feet, two encoder inputs, and a battery life of eight hours.

- SDK available



## 110-LAN

5.4" x 2.9" x 1.3" • 130 mm x 73 mm x 32 mm

110-LAN was developed to integrate into any new or existing automated system, including industrial articulated robots, crawlers, scanners, and immersion tanks. It is ideally suited for flaw detection, thickness measurements, and damage monitoring on tubes, pipes, composites, and metals. The Ethernet link (1000 Base-T, 50 Mo/s) allows A-scan storage, even during high-speed scans.

### Key Features:

- View A, B, or C scans
- 2 encoder inputs
- Interfaces with X - Y or R - θ arm
- Ethernet connectivity
- Synchronization of multiple modules
- Works with Euroscan V & UTwin™ Software
- Compatible with, Windows
- DLL available (Labview, Matlab, etc.)

- SDK available



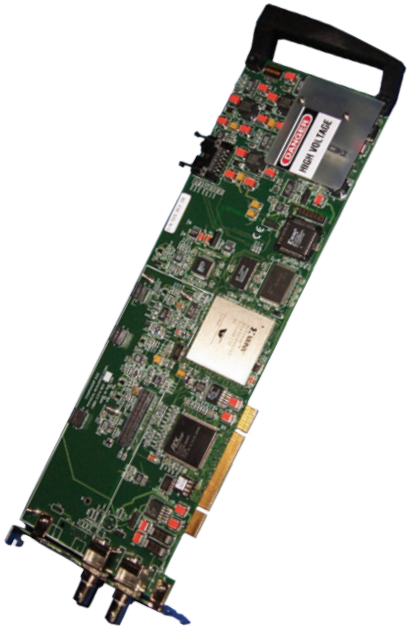
## USB SOLUTIONS: UTC 110 & 8M

UTC 110 - 3.4" x 2.1" x 0.9" • 86 mm x 54 mm x 23 mm  
 UTC 8M - 3.7" x 2.8" x 1.5" • 95 mm x 70 mm x 37 mm

Ready to work in echo mode or transmission, this module has two inputs encoders and can be integrated into a small box IP65. Suitable for embedded applications requiring ultrasonic real-time acquisition, UTC 110 is positioned as a measurement tool for on-site inspections, centers training, OEM and laboratories.

The USB-8M's versatility and portability in MISTRAS products provide cost-effective solutions to a wide range of Ultrasonic and other NDT applications. The multiple scan viewing capability coupled with its software and multichannel applications make the USB-8M a perfect tool in environments like railway, pipeline and weld inspections. Its multichannel data acquisition, imaging, and analysis is ideal for field testing, industrial plants, training centers, and research labs.

- SDK available



## AD-IPR-1210-PCI (12-BIT DIGITIZER)

12-bit analog to digital converter with an integrated, high-performance 300-volt (400 optional) pulser/receiver module. A 10-layer SMT printed circuit board creates a low-noise, high-speed PCI-bus card designed for wide bandwidths, yet fits into one standard PCI slot. Available as an integrated unit or as a stand-alone (analog/digital only board for use with other internal or external pulser/receiver options).

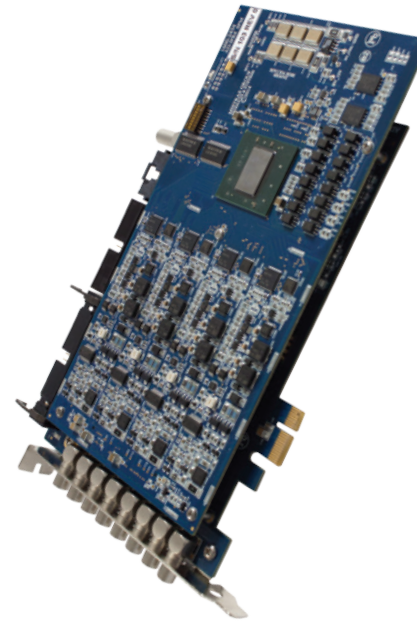
### Key Specifications

- 30 MHz bandwidth
- -20 to +80dB gain in 0.1dB steps
- 6 selectable high pass filters at 0.5/2/4/8/12.5/22.5 MHz
- 6 low pass filters at 2/5/7.5/12.5/17.5/30 MHz
- Distance amplitude correction
- GE Approved, DFO



## ARB-1410 ARBITRARY WAVEFORM GENERATOR

PCI-bus based, highly precise (14-bit), high-speed (100 sample/second) unit that generates an extensive variety of simple or complex arbitrary waveforms. The board uses DDS frequency synthesis to generate an analog output waveform all housed on a single PCI card. It features selectable smoothing filters with an optional high-voltage amplifier (+150V), optional output multiplexer for sensor arrays. The ARB-1410 is ideal for use Acousto-Ultrasonics instruments like the TSCOUT™ (see page 10), to synthesize waveforms for Acousto-Ultrasonics signal generation or Guided Wave Inspection.



## AD-IPR-EXPRESS-4

The AD-IPR-Express-4 is a full UT system on a 2/3 sized PCI Express Card. It includes a pulser/receiver, 250 MSPS, 14-bit analog to digital conversion (available in 1, 2, or 4 channels), and motion control. With a conversion rate of 250 MSPS and 14 bits of resolution, the signal processing is fast and precise, opening the door to a wide range of UT applications. The integrated motion control enables control of up to 4 independent or synchronized axes and 4 encoders for motion feedback. The board also includes spike, square wave, tone burst, and chirp pulsers, (per channel), and four stack channels to interlace images for up to four times faster processing than standard UT boards.



## PHASED ARRAY MODULE (M-PA)

Operates using MISTRAS' UTwin C-Scan Software, 32:128 element array, and a linear & sectoral display to segment data into 10 phased array groups. The Phased Array Module conducts tests up to 100 times faster than conventional UT scanners.

The scalable system fuses state-of-the-art engineering, design, and production methodologies to create a dynamic and comprehensive range of UT offerings, designed to provide operators with more efficient results.



## UT TRANSDUCERS

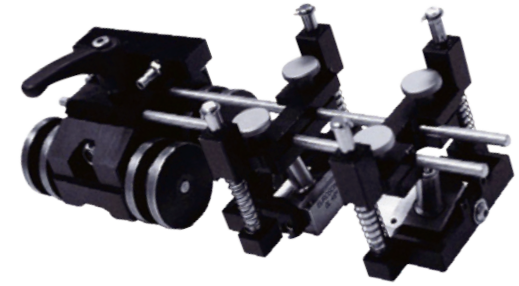
Our transducer product line is entirely commercially available and is offered in such classifications as:

- Contact (straight or angle beam)
- Immersion (flat or focused)
- Dual element
- Annular



## μRUNNER, SIMPLE TOFD AND HAND SCANNER

The μRunner is a simple hand scanner for use with two UT probes and wedges (sold separately). The μRunner includes a single-axis wheel encoder for tracking distance with the UT test. The μRunner can be used in the laboratory or in low-volume TOFD, weld or Phased Array test applications.



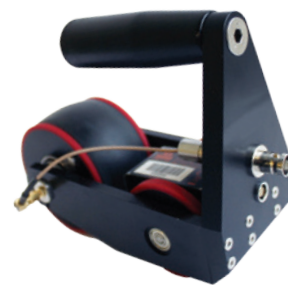
## RUNNER 100, SMALL TOFD HAND SCANNER

The Runner 100 is a small, rugged, four-magnetic-wheeled hand scanner for use with two UT probes with wedges (sold separately), in ferro-magnetic, small pipe (3-inch / 76.2mm diameter or higher) and flat plate inspection applications. Its ruggedness and small size enables inspections in small areas. Recommended in TOFD, weld and field test applications.



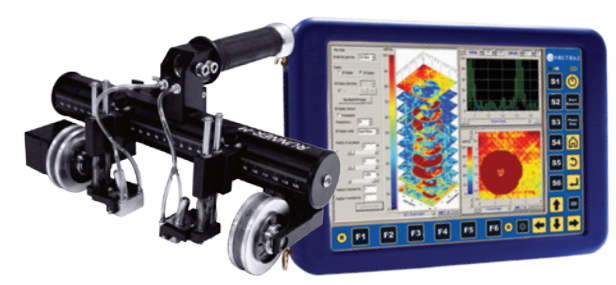
## V-NOTCH TRANSDUCER TUBE FIXTURE

The SPH 718, spring loaded holder for use with our DK718 and DC718EE series probes allows for more consistent coupling and less rocking on small diameter pipes and tubes thanks to its 2 axis v-notches and spring load design.



## SINGLE ELEMENT WHEEL PROBES

The Single Element Wheel Probe uses Sonatest Ltd. rubber technology for near-dry Ultrasonic coupling. Using a single element 15mm immersion probe, it is designed to operate between a 1MHz and 10MHz and is available with a low pressure 38mm tyre (shown) and a higher pressure 25mm tyre. It is complete with an optical position encoder and can be connected to any conventional flaw detector such as the Tablet UT™ with encoder cable adapter.



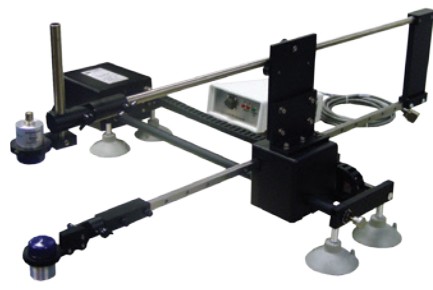
## RUNNER M & 2M, RUGGED TOFD HAND SCANNERS

Very rugged, three-magnetic-wheeled NDT scanners with single encoder for testing high volume, ferro-magnetic, pipe (>8" / 203.2mm diameter) or flat plate. With integration wedges (sold separately) and water couplant connections, the two UT probes for the Runner M and four UT probes (two sets) for the Runner 2M are ideal for harsh environments, TOFD, weld and Phased Array field testing applications.



## MOTORIZED X-Y SCANNER

Stepper motor with 15" x 18" (381mm x 457mm) scan envelope and suction feet (optional magnetic or vacuum suction cup feet). Comes with AC power supply and is interfaced with Pocket UT<sup>®</sup> and Tablet UT<sup>™</sup>. Standard LSI transducer fixture mount so LSI bubbler/gimbal and swivel transducer holder can be attached.



## MOTORIZED X-Y SCANNER WITH THRU-TRANSMISSION

Stepper motor with 15" x 18" (381mm x 457mm) scan envelope and suction feet (optional magnetic or vacuum suction cup feet). Comes with AC power supply and is interfaced to Pocket UT<sup>®</sup> and Tablet UT<sup>™</sup>. Thru-transmission fixture included for use with Non-Contact (Air-Scan) Ultrasonics.



## MANUAL X-Y SCANNER

A traditional dual-axis operated scanner moves strictly in X and Y coordinates. Has 15" x 17" (381mm x 432mm) scanning envelope, universal sensor holder and suction cup feet. Encoder feedback interfaced for C-Scan imaging with Pocket UT<sup>®</sup> and Tablet UT<sup>™</sup>. Internal X and Y encoders provide precise positioning information.



## MINI-SCANNER

The fully-automated, compact MINI-Scanner is designed to inspect flat plate surfaces or pipes down to 3 inches (76mm) in diameter. Featuring powerful magnetic wheels, the MINI Scanner is at home scanning vertically or even upside down. Inspection scanning speeds are as high as 6" per second, with an indexing/crawling speed of 2" per second, or optional servo version with a scan speed of 15" per second and 3"/sec crawling speed. The complete kit includes the MINI-Scanner, 2-axis power supply, all umbilical cabling for power and water, and UT connections for the Pocket UT<sup>™</sup> and Tablet UT<sup>™</sup>. Optional transducers, bubblers and TOFD wedges are available.

### Product Features:

- Two Axis of Precise Motion
- Waterproof Stepper Motors
- Scan Speed 6"/second
- Magnetic Wheels
- 14" Scan Width
- Zero Backlash Lead Screw
- Universal Transducer Mount
- Accepts Optional TOFD Kit
- Optional Bubbler with Gimbal-Gimbal Compliance
- 100-240 VAC & 9-18 VDC Operation
- Custom Carrying Case



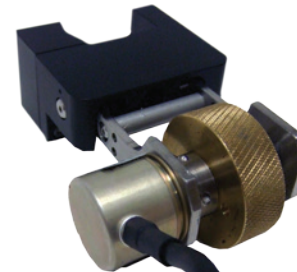
## MINI-B SCANNER

High temperature (500°F), four magnetic-wheeled UT line scanner with single axis encoder. Comes with high-temperature dual-element UT sensors, two sensor cables, encoder cable with connector for use with Pocket UT<sup>®</sup> and Tablet UT<sup>™</sup>, couplant feed tube, and carry case. Can scan circumference of high-temp pipe diameters over 3".



## RUS SCANNER

A single-axis, encoded, magnetic-wheeled hand scanner designed for the inspection of highly-curved or flat metal surfaces. Its spring-loaded, dual-crystal, dry-contact wheel transducer eliminates need for surface preparation or couplants. It can function in temperatures up to 195°F and is ideal for use on bridges, piping, and storage tanks.



## M-SCAN SCANNER

Miniature single-axis-encoded, single magnetic wheel scanner for inspection of either flat or curved surfaces. Universal sensor clamp for sensor mounting or bubbler mounting is included, as well as a 2-meter encoder cable to interface with the Pocket UT<sup>®</sup> and Tablet UT<sup>™</sup>.





## UT GANTRIES

MISTRAS offers the ultimate in precision UT Gantry Systems. Strategic partnerships with several NDT Gantry manufacturers provide the best mechanical Gantry and motion-control package available. Combine those features with MISTRAS' UT digital data acquisition package and complex contour following abilities, and the results are full-featured Gantry

capabilities customized to meet any customer's unique needs. Full integration with UTwin™ (see Page 14) and the Remote UT™ Module (see Page 2) means customers get the pinnacle in UT data acquisition, imaging and analysis proficiency no matter the size of the asset.



## EXIT CONE INSPECTION SYSTEM

Featuring heavy-duty construction, this is a prime example of MISTRAS' custom-building capabilities. This 7-foot vertical Gantry Bridge has a 5-foot turntable and is capable of pulse echo or thru-transmission testing with either Water Squirter Nozzles or Non-Contact (Air-Scan) UT. With motorized axes X, Y, Z, R, and G, the turntable is mounted onto X/Y transition table while the thru-transmission search tubes are gimbal supported and mounted onto Z-axis. Comes complete with industrial computer, UTwin™ with cluster analysis and RF storage, AD-IPR-1210 P/R - A/D Converter Board, SMC-PCI-8, motor control board and driver encoder feedback, pulser/receiver and transducers, manual manipulators and submersible pump.



## CUSTOMIZED SYSTEMS

MISTRAS can provide unique scanning solutions to meet customer requirements even if they fall outside of our standard system product line.

Our engineering capabilities enable us to evaluate and design the mechanical, UT, and software configuration that will best fit the inspection requirements and offer a system customized to meet those needs.

Or customers can choose from a variety of custom systems that have solved similar issues in the past and could work for you. No matter, MISTRAS has the knowledge and capabilities to construct, implement and support your large-scale scanning needs, custom or standard.



## CALIPERAY™ — REMOTE THICKNESS TRACKING SOLUTION

CALIPERAY™ establishes a new standard for UT wall thickness measurements, condition monitoring, and corrosion management. A permanently-mounted remote thickness tracking system, CALIPERAY™ is designed to monitor piping and vessel wall thickness in high-temperature and difficult-to-access locations. CALIPERAY™ is uniquely qualified for the unattended, long-term monitoring of:

- Crude overhead lines
- Injection points
- Piping elbows
- Reducers
- Tees
- Pressure vessels
- Other areas of concern

These difficult-to-reach locations are typically not tested as often as they should be, due to the inherent risk in sending personnel to hazardous areas of a plant. CALIPERAY™ removes this roadblock through the use of its non-intrusive, permanently-installed sensors, which are clamped onto vessel

walls rather than welded like competing systems, lowering installation costs and optimizing asset integrity.

CALIPERAY™ prioritizes routine maintenance over large-scale remediation by making thickness readings timelier and more accurate to alert users to potential problem areas before they worsen. Certified as intrinsically safe, CALIPERAY™ is sound to use in hazardous environments.

The sensors safely monitor corrosion and erosion on pipe and vessel walls to a resolution of 2 mils, or two-thousandths of an inch. Instead of only taking a measurement once every few years, the system's battery life is capable of taking one measurement per day for five years, in temperatures that up to 350° Celsius (662° Fahrenheit). CALIPERAY™ supports an industry-leading four channels of ultrasonic connectivity,

utilizing a four-channel multiplexer for four single or dual crystal transducers to collect thickness measurements. The system uses a wireless mesh network to transmit data. The mesh network is self-healing and self-organizing, so if there is ever an interruption in the network, such as a temporary or even permanent obstacle, the transducers will simply find another path to the gateway. This smart sensor network makes it easier to install the network, streamlines the collection of data, and ensures higher reliability and lower maintenance.

The remote tracking system is compatible with several types of data-analyzing software. CALIPERAY™ is WirelessHART-Certified, authorizing it as meeting the global standard for

wireless communication between smart sensors and plant management software. The system seamlessly integrates within WirelessHART networks using Federal Communications Commission (FCC)-certified 2.4 GHz radio band for reliable sensor-to-sensor and sensor-to-monitoring system communication. Once the data has been transmitted back to a plant's inspection database management software (such as MISTRAS' Plant Condition Management Software, PCMS®), users can view reporting histories, monitoring trends, analytic charts, damage locations, and the magnitude of flaws. CALIPERAY also comes equipped with its own web application with similar data tracking capabilities.



NON-INTRUSIVE DESIGN AND INSTALLATION



HIGHLY PRECISE READINGS



HIGH-TEMPERATURE FUNCTIONALITY



SELF-ORGANIZING & SELF-HEALING NETWORK



DECREASED READING INTERVALS



IMPROVED CORROSION MGMT. & DETECTION



REDUCED INSTALLATION COSTS



## UT EDUCATIONAL SYSTEM

Combining our Tablet UT™ Ultrasonic C-Scan system with a UPK-T10 Automated Tabletop Scanner gives today's researcher the capability to "look inside" materials to detect, measure and map anomalies all while maintaining the features of a portable, high-end flaw detector. MISTRAS' University Program lets you economically equip every lab with this powerful UT technology. It includes a full C-Scan data acquisition system coupled with full A-, B-, and C-Scan capability, thickness testing and FFT Signal analysis. Includes UTwin™ replay software.

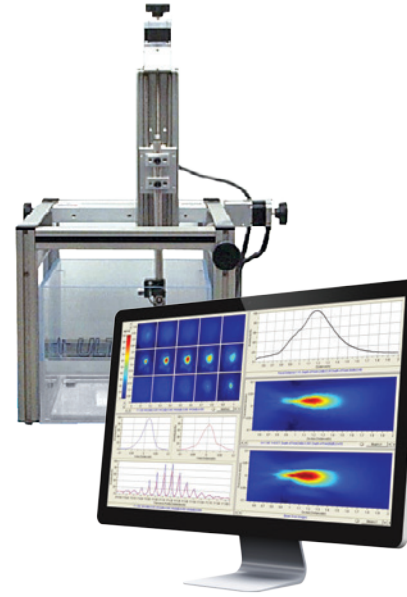
The Tabletop Scanner includes a mini bridge and acrylic tank, a motorized X, Y, and manual Z-axis with a scan envelope of 10"L x 10"W x 10"H (254mm L x 254mm W x 254mm H) and a stepper motor controller and motor driver.



## PORTABLE AUTOMATED C-SCAN SYSTEM

Looking for a little larger display than a handheld system, but still requiring maximum flexibility and portability? The Tablet UT™ is the answer. The Portable Automated C-Scan System features a built in PC interfaced with a UT and motion control system.

With a larger screen image and a more complete C-Scan data collection and analysis package — including UTwin™ software, the Tablet UT™ provides up to 3 axis of motion control and an Automated X-Y Scanner — it offers a comprehensive breed of performance and portability.



## TRANSDUCER BEAM PROFILING

As part of the Transducer Characterization Program (TCPwin™ see page 5), plots and graphs can be configured either individually or combined to offer versatile imaging options. Applicable plots and graphs include:

- Aperture scan graph
- Beam field graph
- Amplitude – distance curve
- Beam profile curve

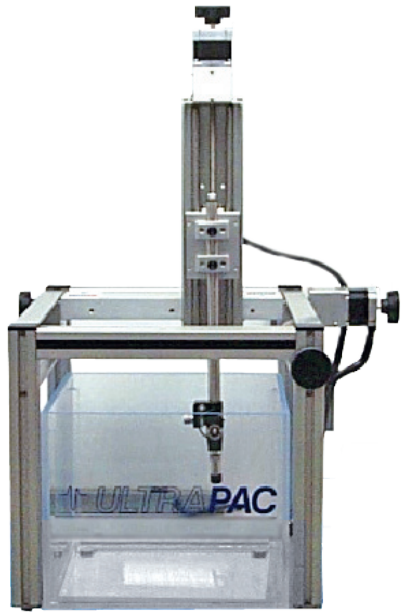
In addition to the variety of plots and graphs offered by the program, there are several different report options as well:

- Transducer information
- Test set-up
- Time domain results
- Frequency domain results
- Loop gain calculation



## NON-CONTACT TABLET UT AIR-COUPLED TESTING SYSTEM

This non-contact system provides an ultrasonic testing solution to characterize and test composite material. The testing method offers low-frequency operations with tone burst pulsers, attached to MISTRAS' Tablet UT™. The Non-Contact Tablet UT™ Air-Coupled Testing System includes spike, square wave, tone burst, and chirp (400V Max) pulsers (per channel), 3-axis motion control, and all the standard features of the Tablet UT™. Using the UTwin software, the Express-4 card can operate down to 50 KHz and above.



## UPK-T10

The UltraPAC™ UPK-T10 consists of a mini bridge, an acrylic tank, and a motorized X/Y/Z-axis with a scan envelope of 10"L x 10"W x 10"H (254mm L x 254mm x 254mm H). The UPK-T10 is ideal for laboratory or educational uses and is our most compact immersion system.

### What's Included:

- Lab computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer



## UPK-T24

This standard-duty immersion system has a medium duty bridge along with an acrylic tank and a motorized X/Y/Z-axis. It has a long scanning envelope of 24"L x 18"W x 12"H (610mm L x 457mm W x 305mm H) with a 7"(178mm) per-second scanning speed.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer



## UPK-T36

This standard-duty immersion system increases both the scan envelope (36"L x 24"W x 18"H / 914mm L x 610mm W x 457mm H) and the scan speed (20" / 508mm per second) while featuring a standard, medium-duty bridge and acrylic tank with a motorized X/Y/Z axis.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer

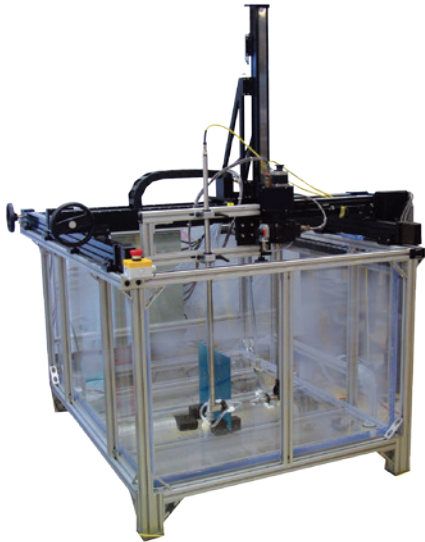


## UPK-T36-HS

Heavy duty, high-speed bridge and acrylic tank with a motorized X/Y/Z-axis. The scan envelope is 36"L x 24"W x 18"H (914mm L x 610mm W x 457mm H) or 24"L x 18"W x 12"H (610mm L x 457mm W x 305mm H) while the scan speed is greater than 20" (508mm) per second. Our most economical heavy-duty immersion system.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer
- Water pump and filter



## UPK-T48-HS

With 4 foot scan envelope (4' L x 3'W x 2'H / 1.22m L x .91m W x .61m H), this has a linear motor on the X and Y-axis in addition to a motorized X/Y/Z,G and S-axis. Fastest standard immersion system (30 inch / 762mm per second scan speed). Add-ons: Motorized manipulator and thru-transmission fixtures.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/ Receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Motorized manipulator
- 5 MHz immersion transducer
- Water pump and filter



## UPK-T60-HS

Heavy-duty, high-speed industrial system with motorized X/Y/Z-axis and a 5 foot (1.5m) scanning envelope (5'L x 3'W x 3'H / 1.52m L x .91m W x .91m H). The scanning speed also eclipses 20 inches (508mm) per second. Add-ons: Motorized manipulator and thru-transmission fixtures.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer
- Water pump and filter

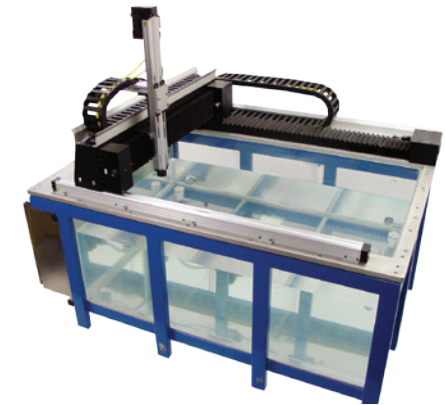


## UPK-T72-HS

Scan envelope jumps to 6 feet (6'L x 3'W x 3'H / 1.82m L x .91m W x .91m H) without hurting high scan speed (more than 20 inches / 508mm per second). Heavy-duty, industrial system with motorized X/Y/Z-axis. Add-ons: Motorized manipulator and thru-transmission fixtures.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer
- Water pump and filter



## UPK-T48-LM

With 4-foot scan envelope (4'L x 3'W x 2'H / 1.2m L x .91m W x .61m H), this has a linear motor on the Y-axis in addition to a motorized X/Y/Z axis. Fastest standard immersion system (40 inch / 1016mm per second scan speed). Add-ons: Motorized manipulator and thru-transmission fixtures.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer
- Water pump and filter

# CUSTOM IMMERSION SYSTEMS

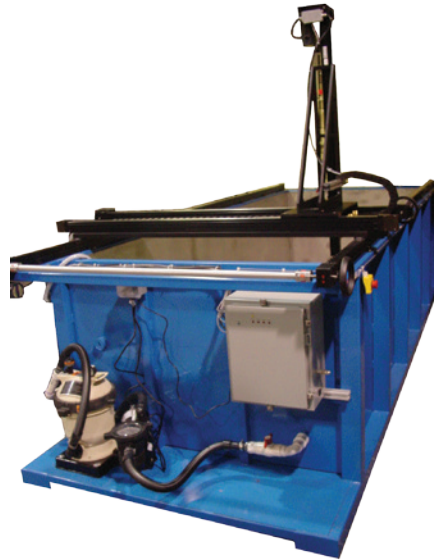


## UPK-T72-HSDZ

A heavy-duty, high-speed industrial immersion system. Advantages include a large scanning envelope (6'L x 6'W x 4'H / 1.82m L x 1.82m W x 1.21m H), turntable, and a variety of axes: motorized X, Y, Z1, Z2, A1, B1, A2, B2.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Dual motorized manipulator
- 36" (914.4mm) diameter turntable with motorized lift platform



## UPK-T156-HS

Combines extremely large scan envelope (13'L x 5'W x 3'H / 3.9m L x 1.5m W x .91m H) with high scan speed (20 inches / 508mm per second). Motorized X/Y/Z-axis. Heavy-duty, industrial system.

Add-ons: Motorized manipulator and thru-transmission fixtures.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Manual manipulator
- 5 MHz immersion transducer
- Water pump and filter



## UPK-T480-DBHS

This heavy-duty industrial immersion system offers one of MISTRAS' largest scan envelope available at 40 feet (40'L x 12' W x 4'H / 12.19m x 3.66m W x 1.21m H) while still maintaining high-speed scanning capabilities (20 inches / 508mm per second). Features a motorized dual bridge each with X/Y/Z/G/S-axes.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-8 stepper motor controller board
- Motor driver system
- 5 MHz immersion transducer
- Water pump and filter
- Heaters

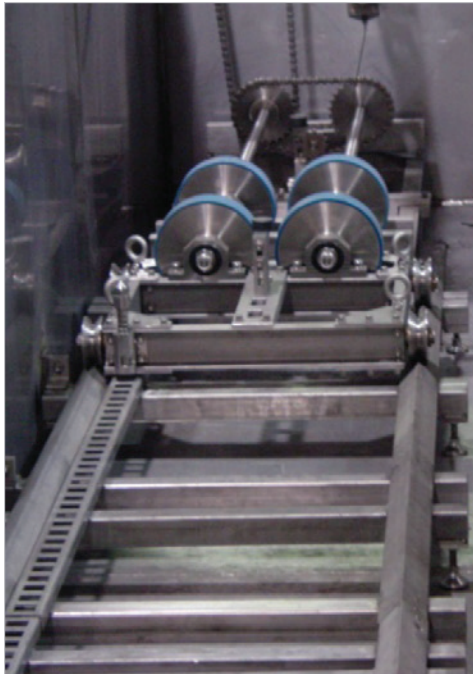


## UPK-T240-HS

With a 20-foot scan envelope (20'L x 3'W x 3'H), this high-speed, heavy-duty industrial system features motorized X/Y/Z/G/S-axes while offering a 20 inch (508mm) per second scanning speed.

### What's Included:

- Industrial computer
- UTwin™ A/B/C-Scan software
- AD-IPR-1210 integrated pulser/receiver- A/D converter board
- SMC-PCI-8 stepper motor controller board
- Motor driver system
- 5 MHz immersion transducer
- Water pump and filter

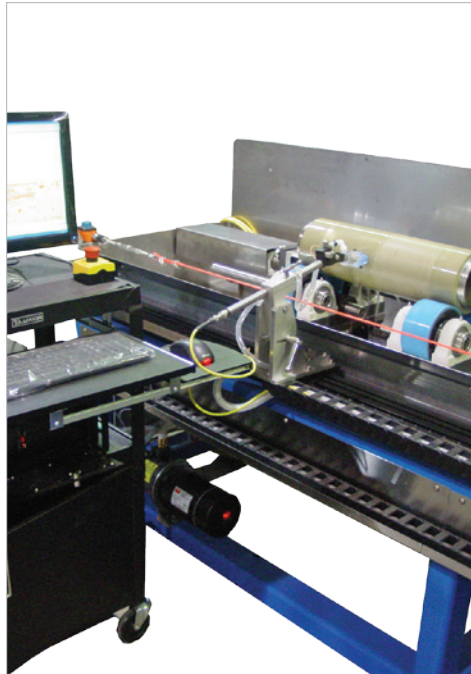


**UPK-BR20** (BAR ROTATOR)

This bar rotator immersion system accessory features rollers that allow for the rotation of cylindrical parts (tube or bar) in a horizontal matter for Ultrasonic testing.

This model has a 20-foot length capacity and a 6,000-pound maximum load.

Materials' diameter can range from 3-14" (76.2 - 355.6mm). It can even accommodate tubes or bars as short as a foot. It also has an adjustable rotating idler. All scans and indexes are fully encoded.



**UT SQUIRTER IMAGING SYSTEM**

The UT Squirter Imaging System comes in single or multichannel configurations. Operable with a scan envelope of up to 15 feet (15'L x 3' to 12" / 4.57m x .91m to .30m diameter) with a maximum weight of 1,000 pounds. It is capable of scanning in X or in rotation axis.

**What's Included:**

- Industrial computer
- UTwin™ A/B/C-Scan full version with Cluster & Auto Analysis software
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Search tube
- Squirter and immersion transducer
- Water sump, reticulating pump and filter

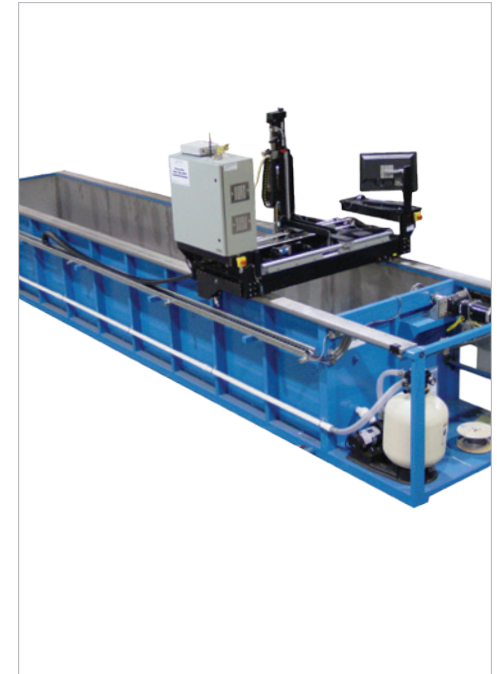


**DOT 2' CYLINDER BOTTLE SYSTEM**

This 7-channel multiplexed Ultrasonic testing system services 4-inch (101.6 mm) and larger cylindrical-shaped parts.

**What's Included:**

- Industrial computer
- UTwin™ A/B/C-Scan full version with Cluster & Auto Analysis software
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- 7-transducer head
- Seven each 5 MHz transducers
- Water pump and filter



**UPKII-T264-HS**

Heavy-duty, high-speed industrial Billet/Bar immersion system with motorized X/Y/Z/R-axis. Scan envelope (22'L x 4'W x 3'H / 6.70m L x 1.21m W x .91m H) with 20 inch (508mm) per second speed and bar rotator.

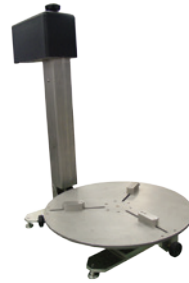
**What's Included:**

- Industrial computer
- UTwin™ A/B/C-Scan full version with Cluster Analysis & RF storage software
- MUX-8 5-channel multiplexer
- AD-IPR-1210 integrated pulser/ receiver- A/D converter board
- SMC-PCI-4 stepper motor controller board
- Motor driver system
- Bar Follower UPK-BR20 with 5-transducer head
- Five each 10 MHz transducers
- Water pump and filter



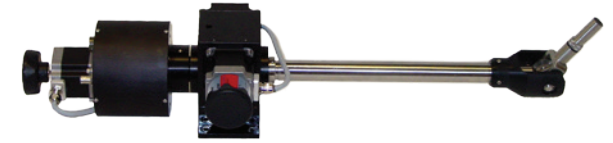
## MANUAL MANIPULATOR

This features a manual gimbal/gimbal adjustment (range: +/- 90°, +/- 45°) to allow for easily adaptable transducer positioning during Ultrasonic testing. It's constructed with non-corrosive material, with brass gears available for an additional cost.



## DROP-IN TURNTABLE

Stepper motor driven turntable features a self-centering three-jaw chuck and allows for the rotation of cylindrical parts (tube or bar) vertically. The 14 inch (355.6mm) diameter platter has a 200 pound max load, while the 18 inch (457.2mm) platter has a 400 pound max.



## MOTORIZED MANIPULATOR

This accessory upgrades most immersion systems by providing repeatable transducer positioning, using a stepper motor driven gimbal & swivel axis to follow the contours of complex components. Lightweight and compact, it's incorporated into the Z-axis and is a valued addition to UT systems that employ squirters.

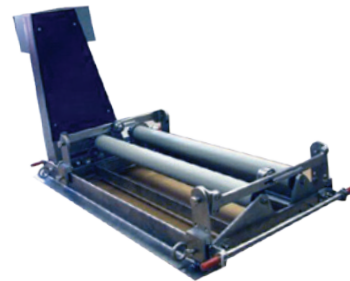
Also suitable for a heavy-duty immersion system upgrade, in lengths of 36" (914mm) and 48" (1219mm).



## THRU-TRANSMISSION FIXTURE & SQUIRTERS

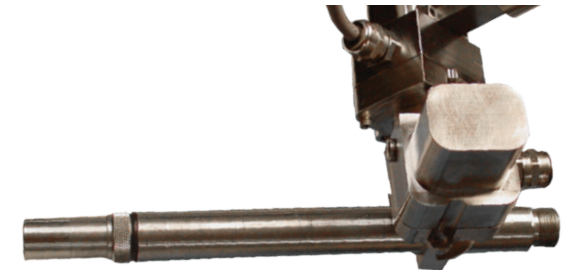
These attach to the Z-axis and are fully adjustable for complete transducer alignment. They can be used in an immersion or squirter configuration.

Squirter assemblies come equipped with submersible pump and water flow valve.



## DROP-IN BAR ROTATOR

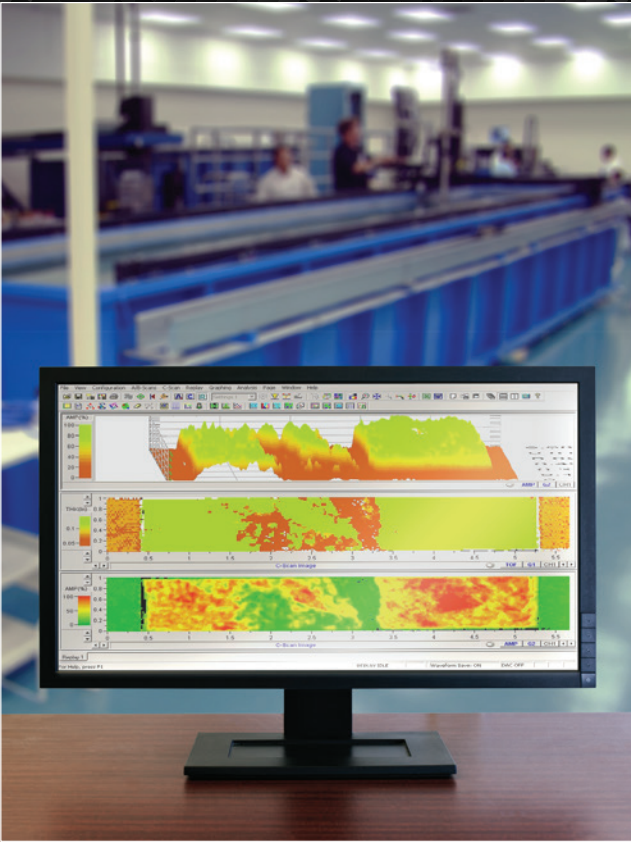
Motor driven rotator with encoder feedback allows for rotation of cylindrical parts (tube or bar) horizontally. The two 40 inch (1016mm) bar length, of one 12 inch (304.8mm) diameters have a 2000 pound max load capacity with motor drivers and interfaces with a PCI-SMC4/8 board.



## MINIATURE MOTORIZED MANIPULATOR

Built for speed with a 90° per-second scan time and 60° per-second acceleration. Single axis motions of up to +/-160 degrees are possible depending on combined axis positions, transducer length, and other specific conditions. Can be supplied as an attachment to UHF search tube, will require motor drivers, power supply, and wiring, or as a completely integrated accessory into a motorized Z-axis.





## PHASED ARRAY INTERFACE (CONTINUED ON NEXT PAGE)

MISTRAS has expanded its capability to allow interfacing of our multi-axis automated systems to the latest Phased Array systems including Olympus and M2M systems

These expanded interfacing capabilities bring together the many advances of not only Phased Array, but also precise, high-speed, motion data acquisition.

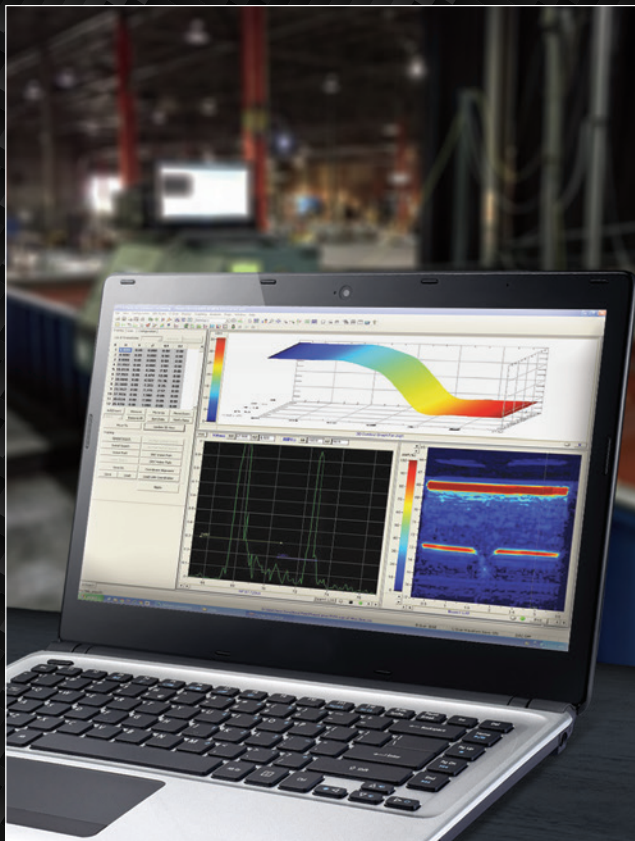
For example, scanning a 4' (1.22m) wide metal plate at .030 normally requires 1600 scan lines. By utilizing a 2" (50.8m) wide .030 pitch Phased Array probe, only 24 scan lines are required! That's a potential throughput improvement of more than 60 times! That increase in efficiency can translate in more profit potential and a savings in man-hours invested in the project.

In addition, inspecting a part with the variable angle beam utilized in Phased Array technology maximizes detection regardless of the defect orientation, while optimizing signal-to-noise ratio.

With existing immersion tanks as a foundation, MISTRAS can also upgrade and retrofit current data acquisition and imaging systems and software with improved and advanced versions. This allows customers to remain up-to-date without the need to overhaul an entire lab's worth of equipment.



# PHASED ARRAY INTERFACE



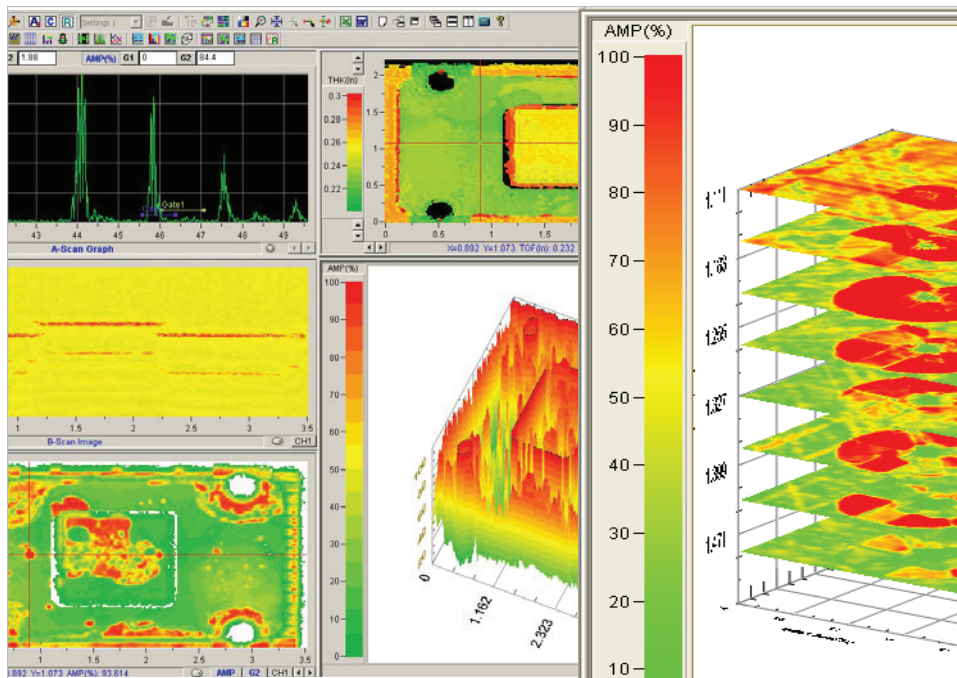
## PHASED ARRAY INTERFACE (CONTINUED FROM PREVIOUS PAGE)

MISTRAS offers a full range of ultrasonic immersion systems with complete digital data acquisition packages. Typical scanners range from mini-lab scanners, mid-size acrylic or stainless steel tanks to large plate, forging and bar rotator scanners. Three to six motorized axes of motion control, including contour following software, are also available.

Upgrading a current multi-axis automated system with Phased Array capabilities has a variety of advantages, including:

- Decreased inspection times
- Excellent repeatability
- More accurate results
- Motor driver system
- Ability to inspect complex geometries
- Exponential throughput production increase





## UTWIN™ SOFTWARE

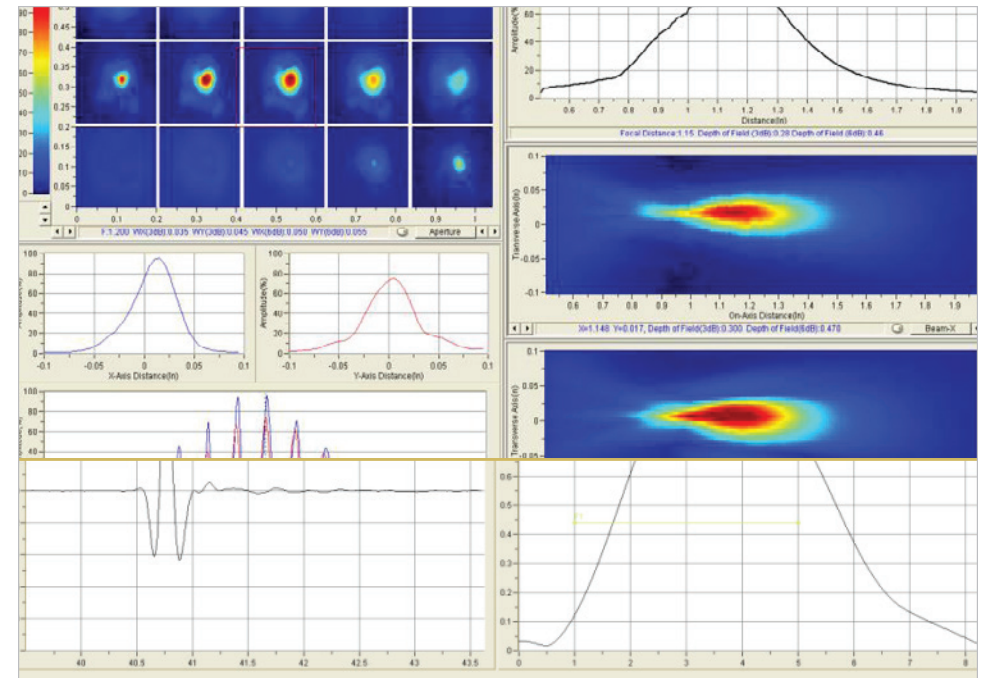
UTwin™ is a third-generation Windows™ data acquisition, imaging, and analysis software system with intuitive pull-down menus, independent C-Scan pages and feature icons. It has multiple real-time A-, B-, and C-Scan displays, coupled with powerful post-processing modes (zoom, pan, size/measure, RF replay, cluster characterization and Excel export capabilities). Users can customize any mix of A-Scan (RF, full wave, positive or negative half wave), B-Scan (real-time or post-analysis (except RF waveforms)) or C-Scan (amplitude, TOFD) displays on one screen. UTwin™ supports up to eight UT channels from multiple sources (PCI cards, multiplexers, or external pulser/receivers).

### Key features include

- Flexible hardware configuration for new systems, upgrades and custom installations: multiple pulser/receiver (P/R); multiple analog to digital (A/D) converter; multiple axis scanner (stepper motor).
- 16 axes motion control with or without encoders and optional motorized manipulator support
- Real time display of and acquisition of A-, B-, and C-scan
- Multiple gate settings (currently up to 4 for standard UTwin™; custom systems can provide more)

### Optional features include

- RF waveform storage and replay, with changing gate and analysis settings
- Weld analysis
- TOFD (Time of Flight Diffraction)



## TCPWIN™ SOFTWARE

TCPwin™ is one of the most flexible and complete transducer characterization programs (TCP) available. TCPwin™ features the abilities to utilize waveform and spectrum graphs, including frequency and signal data; to output a comprehensive calibration report; and to be used on a standard immersion system with the UTwin™ option. Its user-friendly configuration offers reporting and display formats for any user while still following ASTM-E1065 Standard Guide for Evaluating Characteristics of Ultrasonic Search Units. TCPwin™ provides the ultimate tool required to document your transducer specifications. It can be supplied as an upgrade to our existing systems or as a new addition.

### Transducer Beam Profiling

- The plots and graphs can be configured individually or combined as shown above.

### Waveform & Spectrum Graph Reports

- Transducer information
- Test set-up
- Time domain results
- Frequency domain results
- Loop gain calculation

### Complete System Configuration

- PC with Windows™ 10
- UTwin™ – TCP Software
- Immersion tank and 3-axis scanner
- AD1210-IPR pulser/AD board
- SMC-PCI motor controller board
- UPK-MB-Ball, test block and ball targets

### Plots AND Graphs

- Aperture scan graph
- Beam field graph
- Amplitude – distance curve
- Beam profile curve



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