

Pocket UT™: Portable Ultrasonic C-Scan Imaging System

POCKET UT™ SYSTEM

MISTRAS offers the innovative Pocket UT™, a battery-operated, hand-held, stand-alone, full C-Scan data acquisition system. Its portability and ease of use, coupled with its full A, B and C-Scan capability and optional TOFD capabilities, make the Pocket UT™ System (along with available companion scanners or other compatible devices) ideal for on-site inspection applications. It quickly assesses the presence, depth, shape and orientation of cracks, flaws, corrosion/erosion, delamination, and internal anomalies in a variety of structures, materials and surfaces.

The Pocket UT™ can operate as a conventional thickness meter (for spot readings), a basic flaw detector with RF display and alarm gates, or in either active B-Scan or full C-Scan modes. The system has a bright, back-lit LCD color touchscreen and an easy-to-use keypad for fast entry of common commands and data.

Weighing approximately 2 lbs. (.9 kg), the Pocket UT™ uses the Windows-CE™ operating system and integrates all ultrasonic components together in a rugged, rubber-encased enclosure. With a user-replaceable and rechargeable battery pack, the system can also operate via the included 100-240 Volt AC/DC adapter/charger.

The Pocket UT™ System includes an internal

spike, square wave and tone burst ultrasonic pulser/receiver, data acquisition software, motion control hardware and software for scanning, 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 "R-Scan". This incorporates a unique dry-coupled rolling sensor and linear encoder that enables full C-Scan data acquisition in a hand held scanner. The rolling sensor permits the scanner to be used without messy couplant on most surfaces encountered in an industrial or field environment.

In addition to connecting many single and dual-axis manual scanners, software is included to directly operate and control many automated dual-axis scanning systems or other portable X-Y and Pipe Scanning Systems.

TOP 10 APPLICATIONS FOR POCKET UT™

- Impact Damage Assessment on Composites
- Lightning Strike Inspection Aircraft
- Delamination Evaluation in Composites
- TOFD Weld Inspection
- Rope Access UT Inspection
- Boiler Tube Thickness Evaluation
- Flow Accelerated Corrosion Mapping
- EPRI CHECWORKS Compatible for Nuclear
- Bridge Gusset Plate Corrosion Assessment
- Rapid Pipe Thickness Scans for Wall Loss

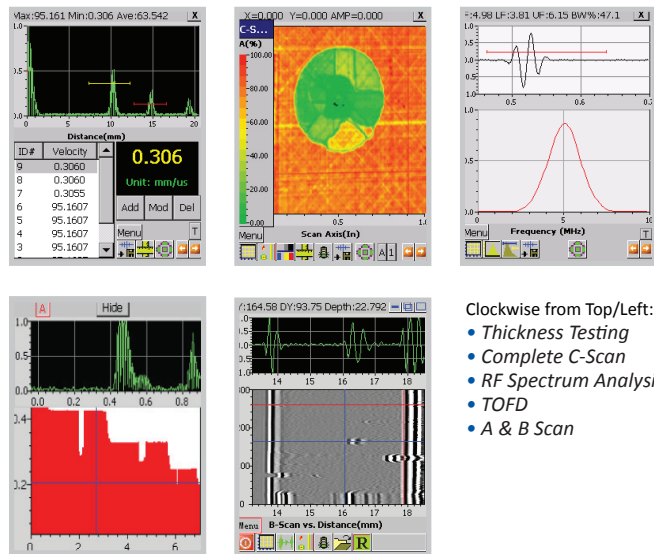
Key Features

- Data logging
- Complete C-Scan with waveform storage
- Thickness testing digital display w/A-Scan
- Flaw detector w/A and B-Scan
- Real time FFT spectrum analysis
- Spike, Square Wave and Tone Burst
- Field auditing tool (meets any UT testing need)
- 2-axis manual/automated scanner interface for immersion testing or contact testing
- Easy hand-held operation
- Up to 4-hour, integrated battery pack
- Windows CE software, familiar and easy to operate
- Shortcut keypad and LCD for data entry, analysis and review of results, touch screen pendant control
- Optional rolling sensor provides continuous area scan rather than point readings as with other NDT devices
- C-Scan resolution up to full capability of the scanner
- Dual gates with IP or first ECHO synchronization for contact or immersion testing
- Permanent digital record of the test results
- Compact Flash card and USB port for data transfer to laptop or desktop PC

Pocket UT™ System



5 UT Instruments in 1



Clockwise from Top/Left:

- Thickness Testing
- Complete C-Scan
- RF Spectrum Analysis
- TOFD
- A & B Scan

Companion Scanners for Pocket UT™ System



1. R-SCAN

R-Scan is a single axis encoded scanner used on flat or highly curved surfaces such as pipes and vessels. The R-Scan is a four magnetic wheeled device meant to be used on ferrous structures with the wheels assisting the unit to stay on track. A spring loaded, dry-coupled, UT sensor for monitoring the thickness of a structure comes complete with a cable for directly connecting to a Pocket UT™ System. Optional non-metal wheels are available.

2. MINI B-SCAN

Durable single axis encoded B-Scan can scan the circumference of pipe diameters over 3" and up to temperatures of 500°F (intermittently). The scanner comes standard with a spring loaded .375" diameter dual element 5 MHz dual element transducer.

3. X-Y SCANNERS

The Manual X-Y Scanner, a traditional type dual axis operated scanner, moves strictly in X and Y coordinates. Internal X and Y encoders provide precise positioning information to the Pocket UT™ System. A universal sensor holder allows easy attachment of any UT sensor or sensor assembly. The standard sensor holder also has Gimbal & Swivel compliance built-in to allow scanning of contoured surfaces. An optional sensor bubbler holder kit is also available.

The Auto X-Y Scanner (not shown), with internal stepper motors,

provides automated movement of the scanner for position feedback. An "LSI" type sensor mount is provided so an LSI type Bubbler/Gimbal & Swivel Transducer holder and assembly (optional) can be attached. A small, portable, AC or battery operated Scanner Control box provides the necessary power and motor drivers to operate the motorized X-Y stage. A scanner interface cable which connects directly to the Pocket UT™ motion control connector is also provided, for ease in setup and operation of the Pocket UT™ with the scanner. The scanning dimensions for both the Manual and Auto X-Y Scanner are approximately 15" x 17" (38 x 43cm) and they both come with suction cups for mounting to any smooth surface, optional vacuum operation suction cup assemblies and magnetic feet for attaching to ferrous metals.

4. TOFD SCANNER

The TOFD (Time-Of-Flight-Diffraction) Scanner positions two angle beam transducers facing each other to transmit and receive the diffraction of ultrasonic waves generated in this technique allowing the user to view weld quality quickly. This highly efficient hand-held inspection scanner needs only one person to operate and is sensitive enough that an external preamplifier is not even needed.

5. MINI SCANNER

The fully automated Mini Scanner is designed to inspect flat plate or pipe down to 3" in diameter. Inspection scanning speeds are as high as 7"

per second, with an indexing/crawling speed of 3" per second. Featuring magnetic wheels, the Mini Scanner is at home scanning vertically or even upside down. The complete kit includes the Mini Scanner, 2-axis power supply, all umbilical cabling for power and water, and UT connectors to the Pocket UT™, optional transducers, bubblers and TOFD (Time-Of-Flight-Diffraction) wedges are available.

6. UNIVERSAL PROBE SCANNER

The M-Scan, designed with a linear-scan encoder for B-Scan and C-Scan, has a magnetic knurled wheel which maintains contact and does not slip on wet surfaces. Spring loaded arms ensure that the encoded wheel is always in contact with the surface in upside down, vertical, horizontal and circumferential positions. The versatile stainless steel pivot-arm design allows users to use different diameter probes ranging from 1/4" to 1".

7. AUTOMATED TABLETOP SCANNER

The Tabletop Scanner is a small immersion tank with a 10" x 10" scanning envelope. X and Y axis are motorized with a manual Z Axis. This scanner comes with its own AC/DC powered motor driver interface. Metallic, Ceramic or Composite materials immersion inspection for internal defects, inclusion, delamination, dimensional thickness testing, cracks and bond quality. The small scanner provides the capability of establishing feasibility to test samples and offers the capability to develop testing procedures that can be applied to larger scanning systems.

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5 UT Instruments in 1

- Thickness Testing with A-Scan
- Complete C-Scan
- RF Spectrum Analysis
- Flaw Detection with A & B Scan
- TOFD (Time-Of-Flight-Diffraction)

For more information, please call 1-609-716-4000 or visit us on the web at www.mistrasgroup.com

Pocket UT™ Specifications:

Functions:	Thickness gauge, flaw detector, A-, B- or full C-Scan
Pulse Voltage:	50 – 400 V Turnable Spike, Square, Tone Burst
Pulse Width:	50 – 1000 ns
Pulser Repetition Rate:	50 Hz – 1 kHz
Bandwidth:	500 kHz – 20 MHz
Receiver Gain Range:	0-92 dB
A/D Resolution:	10 bits
Maximum A/D Rate:	100M Samples per second - 100MSPS
UT Operation Mode:	Pulse-echo and through transmission
Dist. Amplitude Correction:	Up to 60 dB in 0.1 dB steps
Gates:	2 independent gates with separated gate delay, width controls, synchronization threshold and detection threshold
Selectable Filters:	6 high pass and 5 low pass (127 Tap FIR)
Selectable Trigger:	Software controlled, external input, signal threshold
Screen Operation:	Freeze, waveform recall, zoom, pan and reference memory
Report Generation:	Can be used directly or further processed with PC-based UTWin Replay-software
USB Port:	USB connectivity port
Monitor:	Standard 3.5" 1/4 VGA TFT display with 240 W x 320 H pixel resolution, touch screen
Power:	Powered by 7.2 V integrated battery pack (user replaceable) or 100/240 V AC through an external AC/DC adapter/charger
Battery Time:	Up to 4 hours, rechargeable, nickel metal hydride
Operating Temperature:	-5° C to 45° C
Operating Humidity:	Up to 95%, non-condensing
Dimensions:	9.5 x 5 x 2.2 in. (240 x 130 x 60 mm)
Weight:	2 lbs. (.9 kg)

POCKET UT™ SYSTEM

Pocket-UT™ Hand Held Ultrasonic Full C-Scan Data Acquisition System comes complete with Windows CE Operating System, Pocket UTwin™ with A,B, & C-Scan and the following accessories:

- 1 - NiMH Battery Pack
- 1 - 100-240 VAC, 50/60 Hz, Pocket DC Adaptor
- 1 - 5 MHz, General Purpose Contact Transducer
- 1 - Sensor Cable, BNC to SMB, 2 Meter
- 1 - Bottle of UT Couplant
- 1 - USB Download Cable
- 1 - Carrying Case
- 1 - User Manual (Part #1611-1000)
- 1 - 1GB Compact Flash Card

OPTIONS FOR POCKET UT™ SYSTEM

- Pocket UT™ External Battery Belt #1611-5045
- Tethered Stylus #M001-2110
- Pocket NDT Fabric Case w/Tethered Stylus #1611-5055
- E317 Calibration Certificate

SOFTWARE OPTIONS

- Pocket UTwin™ Replay
- TOFD Option for Pocket UT™ P/N 1611-7001
- TOFD Option for Pocket UTwin™ Replay

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