

Eddyfi Technologies
Beyond current

Technical
Specifications

MANTIS

Made for the field. Designed for your inspection

Rugged and lightweight Phased Array Ultrasonic Testing (PAUT) flaw detector with Total Focusing Method (TFM).

BUILT WITH DISTINCTION

Mantis™ is one of the most robust and reliable industrial phased array instruments ever produced by Eddyfi Technologies, thanks to careful consideration of the highly durable materials chosen. Rugged casing and a bright resistive touch screen enable outdoor use even in harsh conditions. The Mantis has passed stringent environmental and durability testing —including drop tests— all designed to simulate real-world situations.

TECHNOLOGY AVAILABLE ON DEMAND

- 16:64PR architecture plus two UT channels verified with international standards
- Compatible with existing phased array probes (linear, dual linear, and dual matrix array) and existing scanners (up to three encoder axis)
- Embedded focal law calculation (sectorial, linear, compound) on all parts through Capture software
- Up to eight group configurations
- High inspection speeds thanks to PRF up to 20 kHz
- Real-time FMC/TFM with up to 64 elements for code compliant inspections
- Real-time filters

Mantis is a robust and lightweight flaw detector offering UT, PAUT, TOFD and TFM through the streamlined user interface called Capture™. Based on a 16:64PR architecture with two different models, Mantis addresses both general and advanced applications without compromising productivity.



REMOTE OPERATION AND SUPPORT

Connectivity is achieved with a dongle-activated Wi-Fi, USB 3.0 connector, and Gigabit Ethernet output that allows faster data transfer and remote controlled inspections in challenging conditions (TeamViewer license included). Operators save time in the field with a 128 GB SSD to store larger data files.



Figure 1: PAUT corrosion mapping with Navic scanner and Mantis.

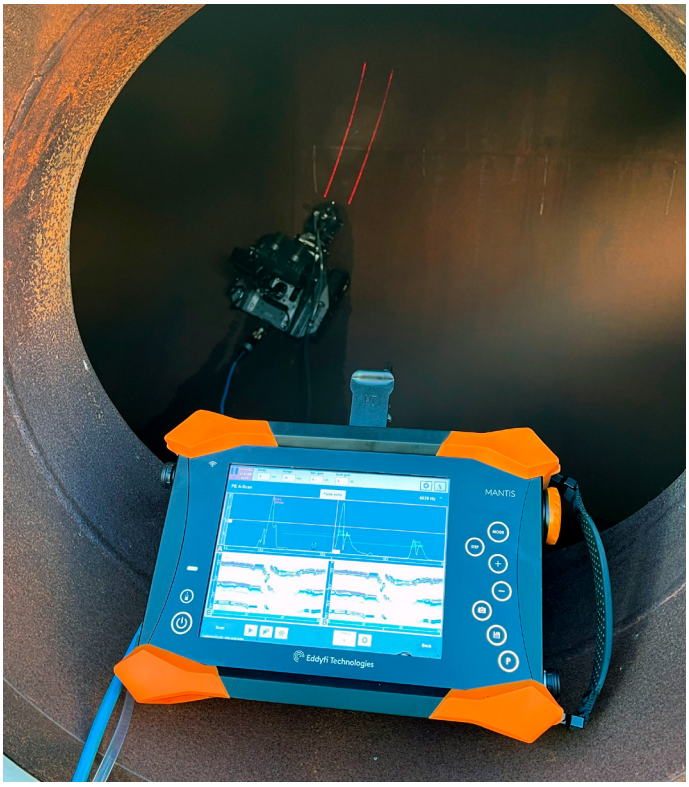


Figure 3: Mantis and VersaTrax™ for remote inspection.



Figure 4: Annotated breakdown of Mantis showing its key features.

DESIGNED FOR YOUR INSPECTION

The innovation behind the Mantis is continually driven by market applications. This robust tool benefits from advanced algorithms through powerful embedded software. Trust the Mantis to bring the latest technology right to your fingertips.

ECOSYSTEM, POWERED BY CAPTURE™

- Capture-GO embedded, with advanced analysis tools (auto-sizing, 3D data display, stitching)
- Ideal for quick setup, inspection, analysis, and reporting, covering your complete inspection task
- Pre-loaded semi-automated and automated scanner configurations
- Capture PC versions available for set-up design and analysis
- File compatibility with Gekko®
- Connectivity for remote support or remote inspection (Wi-Fi, USB 3.0 and Gigabit Ethernet)

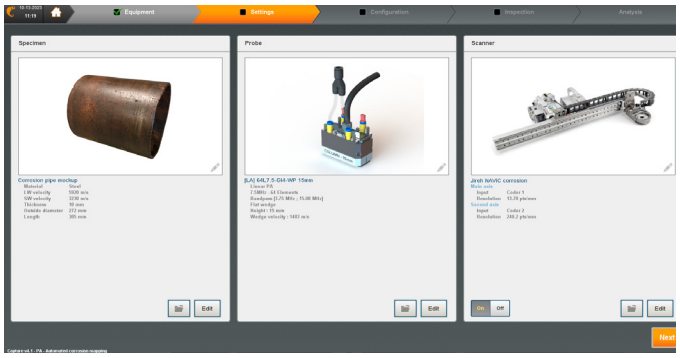


Figure 5: Capture screen with a pipe, probe and scanner.



Figure 6: Navic scanner with Mantis for pipe inspection.

EMBEDDED CAPTURE-GO

- Standalone software for all techniques
- Streamlined intuitive user interface
- Complete probe and scanner database
- Smart 3-click calibration wizards including TCG, DAC, DGS
- TOFD tools
- TFM amplitude fidelity verification

CAPTURE ANALYSIS TOOLS

- 800% dynamic range and software gain
- Gate, view layout and overlay adjustment
- Sizing and reporting tools (with auto-sizing)
- 3D data display
- Data stitching



Figure 7: Capture software for Gekko, Mantis, Panther™ enables streamlined conventional & advanced ultrasonic testing techniques.

MANTIS MODEL COMPARISON

APPLICATION	MANTIS MODEL	
	16:64	16:64PR-TFM64
Corrosion	✓	✓
Butt weld & long seam weld Commonly up to 25-30mm (1-1.25in) thick	✓	✓
Inspection speed – PRF	Multi-group up to 8	Multi-group up to 8
Expertise using FMC/TFM	Up to 12 kHz	Up to 20 kHz
Advanced solutions • CAD import, T,Y-joints, nozzle welds • Matrix & Dual Matrix probes • Scanner up to 3 axis	CAD overlay import only	✓

Upgrade options are available for the MANTIS-16:64. We recommend Gekko for thick components and/or attenuative materials.

SPECIFICATIONS

INSTRUMENT

Dimensions (W × H × D)	311 × 220 × 95mm (12.2 × 8.6 × 3.7in)
Weight (with battery)	4.2kg (9.5lbs)
Power supply	15 V, 6 A
Operating time	>4h (hot swappable battery)
Display	8.4in high contrast resistive screen
Resolution	1024 × 768 px
Storage	128 GB SSD

CONNECTIVITY

1 IPEX connector for phased-array – Splitter compatible	2 LEMO 00 connectors for UT-TOFD (1PR - 1R)
2 up to 3 encoder inputs*	1 external trigger
1 USB 2.0 + 1 USB 3.0	Remote control and data transfer through Ethernet & Wifi
1 HDMI port	2 programmable I/O

ENVIRONMENT

IP Rating	IP65
Operating temp range with battery	-10°C - 45°C (14°F - 113°F)
Storage temp range with battery	-10°C - 60°C (14°F - 140°F)
Drop-test	According to MIL-STD-810G 1

PHASED ARRAY

Maximum active aperture: 16 elements	Linear scanning, sectorial scanning, compound scanning, CIVA Laws
Total number of channels : 64	Focusing modes: true depth, sound path, projection
Linear, matrix*, DLA and DMA* probes	CIVA fueled phased-array calculator
Up to 6 probes | Up to 8 groups | Up to 2,048 delay-laws	On-board focal law calculation on plate, cylinder, T *& Y*, nozzle*

DIGITIZER

Digitizing/summation on 16 channels	16 bits amplitude resolution
FIR filters	Max. sampling freq. 100MHz
Real-time averaging up to x32	FMC A-scan - 16k max samples
Rectified, RF, envelope	PA A-scan - 65k max samples

REAL-TIME TFM

Reconstruction channels: 16 up to 64* elements	Max number of points/image: max 65K. Unlimited with post-processing
Max refresh rate: up to 80fps	Sound paths: direct (L or S), indirect* and converted* modes
All calibration wizards (including TCG) available	A-Scan, B-Scan, C-Scan, D-Scan, Echodynamic, Top view, Side view, 3D view

PULSERS

Phased array channels[1] :	Negative square pulse, width: 35ns to 1250ns
	HT voltage: from 12V to 90V (with 1V step)
	Max. PRF: up to 20 kHz
UT-TOFD channels[2] :	Negative square pulse, width: 30ns to 1250ns
	HT voltage: from 12V to 200V (with 1V step)
	Max. PRF: up to 20 kHz

RECEIVERS

Phased array channels[1] :	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
UT-TOFD channels[2] :	Input impedance: 50 Ω
	Frequency range: 0.6 to 25MHz
	Max. input signal: 1.4 Vpp
	Gain: up to 120dB (0.1dB step)

ACQUISITION

Hardware acquisition gates	Max. data flow 150 MB/S
A-Scan/Peak data recording	Inspection data file size: SSD limitation
FMC recording	Data frame loss indication

[1] Standard: EN ISO 18563-1 for phased array channels
[2] Standard: EN ISO 12668-1 for conventional channels
*Optional

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