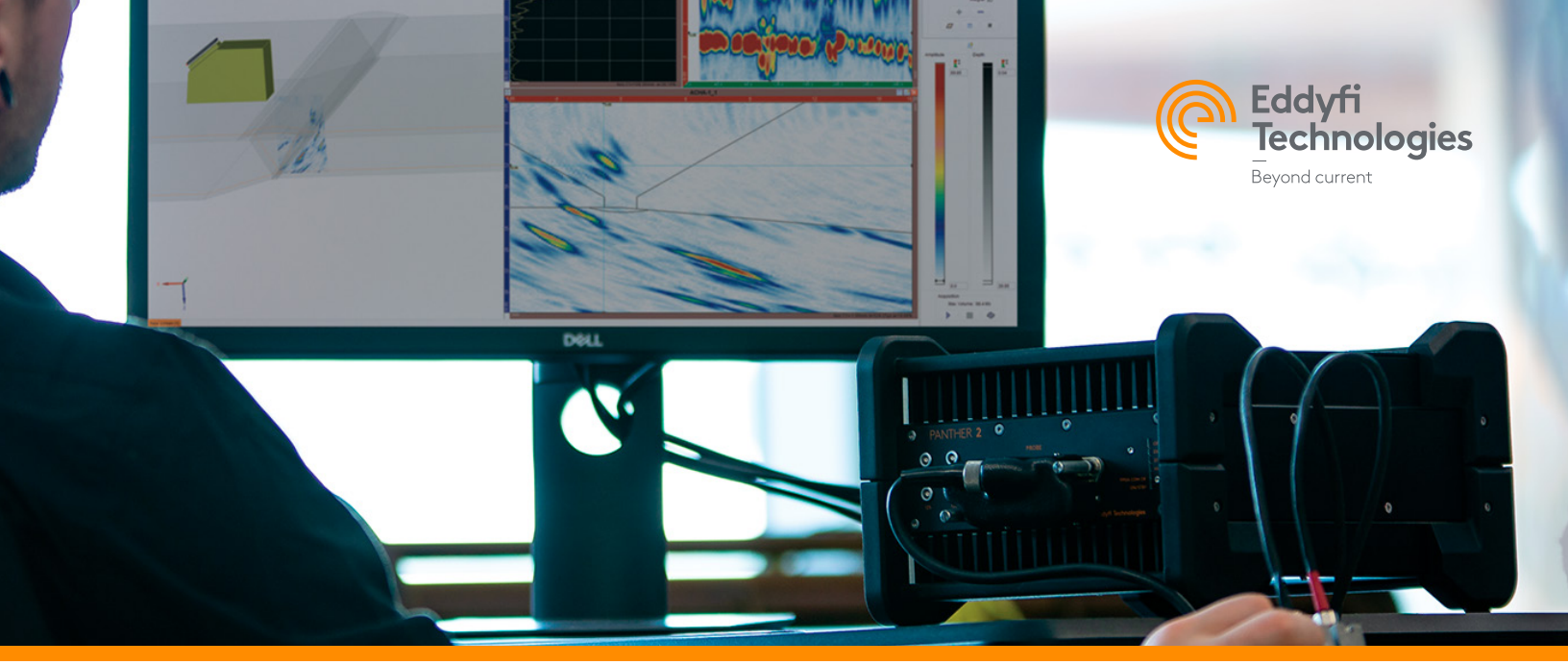


Technical Specifications

PANTHER 2

The ultimate solution for industrial inspections with PAUT and TFM

Combining unrivalled speed and performance, Panther™ 2 by Eddyfi Technologies is the exceptional phased array ultrasonic testing instrument offered in a compact format.

QUALITY REVEALED FASTER

For integrators, manufacturers, industrial labs, and NDT service providers, Panther 2 by Eddyfi Technologies is the ultimate phased array ultrasonic testing (PAUT) instrument with a complete total focusing method (TFM) toolbox delivering data results faster than any other commercially available solution.

DESIGNED FOR INDUSTRIAL ENVIRONMENTS

Well suited for a wide range of diverse inspection applications common across industries such as aerospace, oil and gas, and metallurgy, the second-generation Panther is built to perfection and built for perfection. This is evident with:

- Reinforced bumpers that offer unit protection and convenient stackability.
- Casing that incorporates external fans for optimized heat dissipation with no air intake.
- Flexible toolbox that enables adaptability for unique inspection requirements.
- Automation to streamline the inspection process.
- Exclusive flash mode that fits industrial productivity requirements.

Advanced inspection data results are made accessible with a complete software ecosystem to suit specific needs, including an open software development kit (SDK), Panther 2 is your go-to for flexible and scalable testing requirements.



FASTEST DATA THROUGHPUT

Panther 2 is distinctly equipped for ultra-fast ethernet delivering a 10 Gigabit-per-second high speed link for the fastest data throughput possible:

- up to 30m (98ft) with RJ45 copper cable.
- or up to 200m (656ft) with optic fiber durable enough to handle inspections in even the harshest conditions.

READY, SET...DONE!

We understand that time is money and optimizing your quality assurance investment starts with high productivity. That's why Eddyfi Technologies introduced "flash" modes making Panther 2 an astounding eight times faster than any other commercially available phased array instrument. Why settle for anything less?

PROBE NUMBER LIMIT: NONE

With configurations from 32 up to 2,048 elements, the adaptability of Panther 2 enables scalable automated inspections. The compact unit can be daisy-chained to drive 256 elements simultaneously with up to 16 units in parallel, offering a substantial increase in inspection speed.

ON COMMAND AND IN CONTROL

The control is in your hands, even with a hands-off approach: users can completely automate their process, customize displays, create unique supervision software, develop specific analysis features, and monitor productivity with established benchmarks all thanks to our readily available software development kit (SDK).



Figure 1: Panther 2 can be daisy-chained to drive 256 elements simultaneously with up to 16 units in parallel.

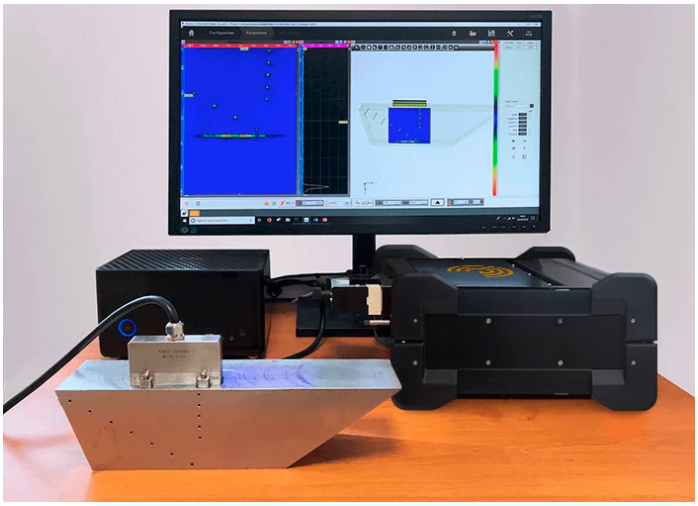


Figure 2: Eddyfi Technologies offers the complete PAUT solution.

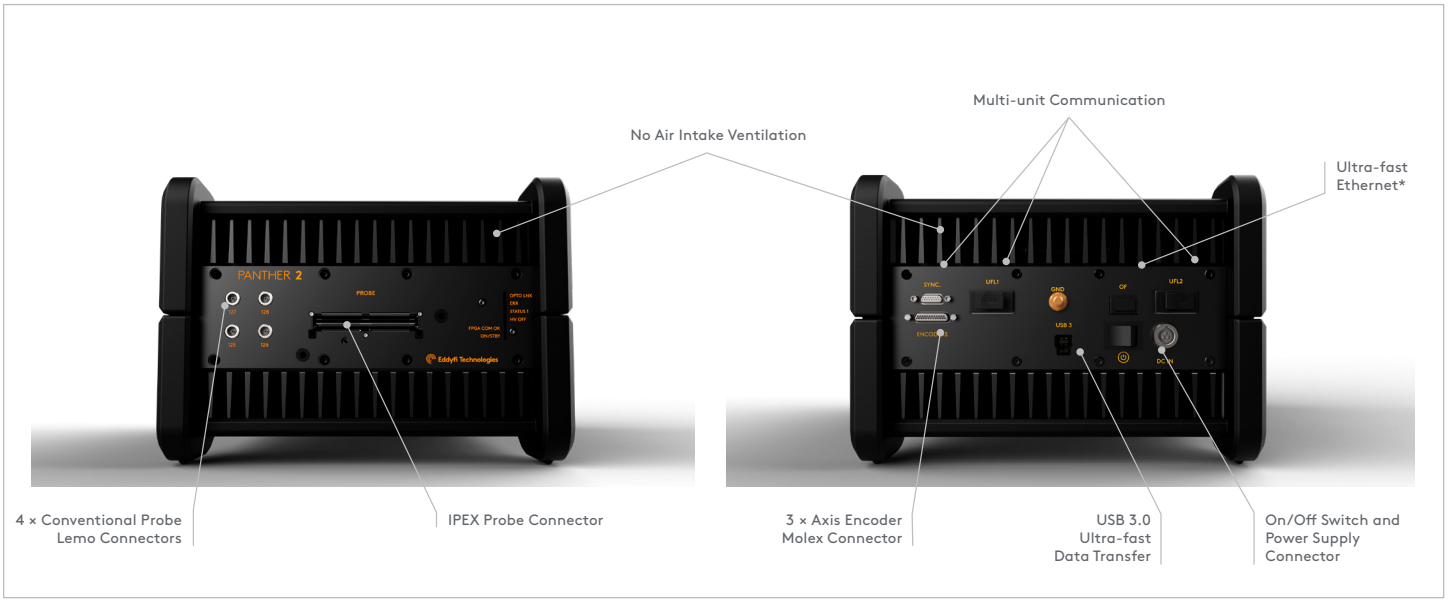


Figure 3: Annotated breakdown of Panther 2 showing its key features.

STAY IN THE KNOW WITH DESKTOP TFM

Acquire™ is Eddyfi Technologies' acquisition software dedicated to advanced phased array ultrasonic testing (PAUT), total focusing method (TFM) settings, and imaging. It was designed for both industrial and laboratory applications, also allowing research and development teams to create customized techniques and new inspection methods.

Acquire software includes a huge PAUT and TFM toolbox, powered by CIVA NDT simulation software. It works with:

- Various type of components including 2D and 3D import
- Most PAUT probe types (including matrix, sparse array, daisy, DLA/DMA, etc.)
- Highly customizable TFM setups to evaluate your own ideas including PWI pitch/catch, full matrix capture (FMC), image fusion, tailored propagation modes, conversion modes, adaptative reconstruction, etc.
- Elementary A-scan access at your convenience
- CIVA simulations to experiment acquiring your own data.

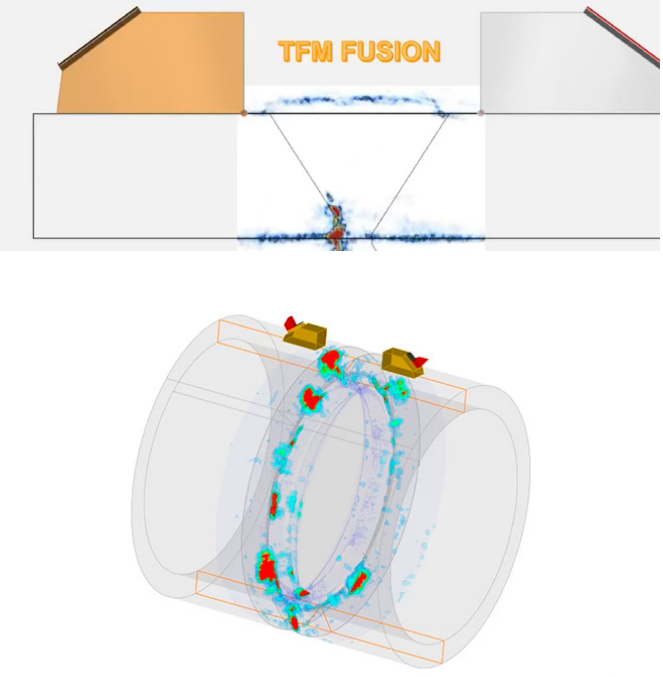


Figure 4: CIVA NDT simulation software.

NO NEED TO LEARN THE HARD WAY: SOFTWARE YOUR WAY

Eddyfi Technologies' software development kit (SDK) is a high-level library that allows users to quickly develop their own applications to control Panther 2 (access any acquisition parameters), access real-time conventional, PAUT, and TFM data or saved data for post processing.

SDK advantages include:

- Hardware abstraction layer: customer code does not depend on model, revision, and number of devices connected to Acquire
- Stable API that enables a future Acquire upgrade without software modification
- It's very fast to develop very basic automation
- OS/language independent: it can be developed from any system able to communicate with TCP/IP socket (PC under Windows, PC under Linux, Mac OS, Android smartphone, PLC, etc.).
- CIVA simulations to experiment acquiring your own data.

A COMPLETE SOFTWARE ECOSYSTEM

Acquire software partly embeds CIVA software for both simulation and setups; it is fully compatible with CIVA and ULTIS for advanced analysis.

Capture™, the proven streamlined software already powering the portable Mantis™ and Gekko® instruments, is now compatible with Panther 2 for both acquisition and analysis. It enables higher productivity and can read Acquire data files.

Panther 2, powered by industry-leading software, let's you tackle any type of inspection.



Figure 5: Capture advanced phased array software compatible with Mantis, Gekko and Panther 2 instruments.

SPECIFICATIONS

INSTRUMENT

Dimensions (W × H × D)	298 × 220 × 159mm (11.7 × 8.7 × 6.3in)
Weight	6kg (13.2lb)
Operating Temperature	-10-50°C (14-120°F)
Storage Temperature	-10-60°C (14-140°F)
IP Rating	IP20 (IP54 with accessory)
Power Supply	110–240 VAC, 50–60 Hz
Configurations	32:128PR, 64:64PR, 64:128PR, 256:256PR *with or without TFM*

PULSERS

128 Phased Array Channels*	
Bipolar Square Pulse Width	30 ns to 2,000 ns
Voltage Amplitude	Maximum 100 V with 1 V step
Maximum PRF	Up to 30 kHz

RECEIVERS

128 Phased Array Channels*	
Input Impedance	50 Ω
Frequency Range	0.4-20 MHz
Maximum Input Signal	1.8 Vpp
Gain	Up to 120 dB (0.1 dB step)
Crosstalk Between Two Channels	< 50 dB
Analog Amplifier	Ultralow noise amplifier

ACQUISITION

A-scan/Peak Data Recording	800% amplitude range
Inspection Data File Size	Hard drive limit
Acquisition Triggers	Time, event, encoder
Data Transfer	USB3, ultra-fast ethernet 10 Gbit with fiber optic or RJ45 cable

ANALYSIS

Views	A-scan, B-scan, C-scan, D-scan, echodynamic, top, side, front, 3D
FMC/PWI Data Acquisition Post-Process TFM Reconstruction	CAD geometry with CIVA™**
Software Compatibility	Capture, CIVA and ULTIS™**
Amplitude Range	Up to 800%

ANALYSIS

CAD Part Geometry	Plate, cylinder, T or Y section, nozzle
CAD Weld Geometry	Butt weld
Customizable Inspection Report	Yes

PHASED ARRAY

Configurations	Linear scanning, sectorial scanning, parallel shooting, ultrafast mixed modes (flash modes)
Scan Modes	Linear scanning, sectorial scanning, parallel shooting, ultrafast mixed modes (flash modes)
Scalable	Up to 16 Panther units (2,048 channels)
Active Aperture up to 256 Elements*	Delay-law computation for standard and parametric components
Probes	Linear, matrix, DLA and DMA, annular, daisy, and sparse array
Number of Probes	Unlimited probes, no group limitation, up to 8,192 focal laws
Focusing Modes	True depth, sound path, projection

REAL-TIME TFM, FMC, PWI (WITH TFM OPTION)

Reconstruction Channels	Up to 128 (up to 256 with two Panther 2 units)
Maximum Refresh Rate	Up to 500fps (depending on pixel numbers)
Maximum Pixels for Reconstructed Image	More than one million
Sound Paths	Direct (L or S), indirect and converted modes, fusion modes

DIGITIZER

Summed A-scan Digitizing	Digitizing and real-time summation on 128 channels (256 with 256:256PR configuration)
A-scan Signal Processing	Rectified, RF, envelope
Adjustable Filters	FIR and IIR filters
Maximum Delay	1.6 ms
Resolution	14 bit Dynamic: 16 bit
Maximum Sampling Frequency	125 MHz
Digitizing Depth (TFM)	Up to 16k points
Digitizing Depth (Phased Array)	Up to 65k points

WIZARDS

Type	CAD overlay and 3D view
	Real-time phased array calculator
	Wedge calibration (angle, height), amplitude calibration, TCG
	Amplitude balancing
	Probe and weld geometry designs

I-O

Connector Type	1 IPEX for phased array
	1 USB 3.0 4 Gbit/sec (330 Mbyte/sec)
	1 Ultra-fast ethernet: RJ45 or fiber optic 10 Gbit/sec
	4 LEMO-00 3 encoder inputs
	1 external trigger
	1 ultra-high-speed summation port (for summation between units)

*Dependent on configuration: 256-channel unit is built using two 128-channel units.
**CIVA is a trademark of CEA, and ULTIS is a trademark of TESTIA.

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Eddyfi Technologies
Beyond current