

Eddyfi Technologies
Beyond current

Technical Specifications

TOPAZ64

Intelligent Portable Phased Array UT Instrument with TFM

Introducing the ultra-intelligent TOPAZ®64, a portable 64 channel phased array ultrasonic testing (PAUT) device with total focusing method (TFM) delivering faster, more reliable inspections.

TOPAZ64 intelligently combines the power of 64 active channels for PAUT applications with the most advanced full matrix capture (FMC), total focusing method (TFM), and plane wave imaging (PWI) capabilities.

SMART FEATURES FOR AN INSPECTION ADVANTAGE

- **Experience more UT power:** Fully integrated portable instrument, 64:128PR phased array configuration, and two separate conventional ultrasonic channels at 200V.
- **Higher resolution for better performance:** High TFM resolution up to 1M points per frame.
- **Fast TFM speed:** up to 110Hz for 65k points frame.
- **Full inspection in one go:** With the multi-mode capability, TOPAZ64 can support two FMC or PWI acquisitions, up to 4 TFM per FMC/PWI, + PA + TOFD all at the same time.
- **Improved probability of detection:** Bipolar pulsers provide more energy to penetrate through thick components. Offering the highest acquisition frequency in the Zetec product range.
- **Save time and money:** Save raw A-Scan data for recordkeeping compliance or TFM post-processing without the need to rescan.



APPLICATIONS

- Code compliant inspections on thick welds
- Corrosion mapping
- Composite inspections
- Complex component inspections
- Stainless steel welds using DMA (Dual Matrix Array) probes
- Friction stir welds
- Flange face corrosion

BENEFITS

- Phased array up to 64/128PR with 2 UT channels at 200V
- FMC or PWI excitation with up to 64 elements
- Real-time high-resolution TFM
- Time-of-Flight-Diffraction (TOFD)
- Raw FMC data saved in encoded mode
- 307 mm (12-inch) high-resolution multi-touch display
- Maximum PRF of ≤ 40 kHz

FEATURING THE LATEST TFM

TOPAZ64 is packed with smart features to handle all UT inspections in one portable package. It features the latest technologies in ultrasound including:

- Code Compliant 64 Channel Phased Array UT
- High Resolution FMC with up to 64 elements
- Real-Time TFM up to 1M Data Points per Frame
- Save RAW FMC data for TFM post-processing and analysis

POWERED BY ULTRAVISION SOFTWARE

TOPAZ64 includes this powerful software onboard. Leverage one software platform across the entire family of Zetec UT products, saving valuable training time and enabling new levels of system synergies. Benefit from powerful features including:

- Embedded advanced focal law calculator with visual feedback
- Onboard volumetric merge and measurement tools
- Interactive help onboard the instrument
- Real-time high-resolution TFM
- Post-processed TFM from recorded elementary A-Scans
- 2D matrix arrays in pulse echo, pitch & catch, or multi-probe configurations
- Remote control capabilities

SEAMLESS SETUP WITH EDDYFI TECHNOLOGIES SCANNERS AND PROBES

When any Eddyfi Technologies scanner, such as the award-winning NDT PaintBrush, Weld Crawler, or probe is connected, TOPAZ64 can automatically recognize and preconfigure the inspection sequence accordingly, saving valuable time.

- Multiple scanning configurations: sector, linear, and compound.
- Two dedicated UT channel: separate conventional UT channel offer 200v pulser and works in P/E or P/C configurations for TOFD examinations.



Figure 1: Annotated breakdown of TOPAZ64 showing its key features.



Figure 2: Annotated breakdown of TOPAZ64 showing its key features.

SPECIFICATIONS

INSTRUMENT

Dimensions (W × H × D)	278 × 343 × 158 mm (10.9 × 13.5 × 6.2 in)
Weight with 1 battery	9.1kg (20.0lb)
Multi-touch display	307mm (12.1in) wide, 1024 x 768 pixels
Air intake	No
Hot swappable batteries	Yes
Storage	256 GB SSD
Data interfaces	Ethernet 1000 Base-T; 1 x USB 3.0; 3 x USB 2.0
Video output	HDMI
Phased array connector	ZPAC or IPEX
Instrument calibration	Compliant with ISO 18563-1/EN 12668-1

PHASED ARRAY

Phased array channels	64/128PR
UT channels	2 P/E or 2 P/C
Amplitude resolution	16 bits
Measurement gates	4 + 1 synchronization gate (peak, crossing, autocrossing)
Maximum PRF	< 40 kHz
Data compression	1, 2, 4, 8, 16
Max. pulser voltage (open circuit)	150Vpp PA UT (Bipolar) /75V (Unipolar) /200V UT
Max. applied voltage (50 ohms)	75v PA UT/200v UT
Bandwidth (-3 dB)	0.5 to 18 MHz PA; 0.5 to 25 MHz UT
Rectification	Digital
Filtering	Analog/digital (FIR)
Smoothing (video filter)	Digital
Self-check	Yes
Automated probe detection	Yes (with Zetec probe ID chip)
Focal laws	1024 with unlimited groups
TFM Frame Size	Up to 1M points
TFM Frame Rate	Up to 110 Hz (65k points per frame resolution)
Maximum number of samples	16,384
Maximum data file size	2 GB; Unlimited for raw A-Scan data
Encoder interfaces	3 quadrature-type

ENVIRONMENTAL

IP rating	Designed for IP66
Operating temperature	-10°C to 45°C (14°F to 113°F)
Storage temperature range	-40°C to 70°C (-40°F to 158°F)
Relative humidity	80% non-condensing

Please note that although they still bear the Zetec logo and branding, the ultrasound instruments and software products are manufactured by Eddyfi Technologies, whereas Zetec branded EC and SG products are manufactured by Zetec Inc. Although affiliated to Eddyfi Technologies, Zetec Inc. remains an independently managed company because of contractual obligations with the US government as a key supplier for classified business. The information in this document is accurate as of its publication. Actual products may differ from those presented herein. © 2024 Eddyfi Canada, Inc. Eddyfi Technologies, Eddyfi, Zetec, TOPAZ, UltraVision and their associated logos are trademarks or registered trademarks of Eddyfi Technologies (wholly owned subsidiary of Eddyfi Canada, Inc.) in Canada and/or other countries. Eddyfi Technologies reserves the right to change product offerings and specifications without notice.

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