

Eddyfi Technologies
Beyond current

Technical Specifications

QUARTZ

Speed up complex ultrasonic inspections

QuartZ is ideal for inspecting tubes, pipes, plates or forgings, composite materials as well as train wheels, rails, and axles. When combined with UltraVision software's legendary power and software development kit (SDK) flexibility, QuartZ is the perfect choice for creating custom inspection solutions.

MEET YOUR SPECIFIC NEEDS, TODAY AND IN THE FUTURE

- **UltraVision® 3 Classic controlled:** Tap into the full power of QuartZ. Offering a 3D work environment, UltraVision delivers the full inspection process within the same software package, from inspection design to advanced analysis and reporting.
- **Scalable:** Up to 10 QuartZ units in parallel controlled by the same UltraVision. Almost no inspection configuration is too big.
- **Easy integration:** Multiple QuartZ units can be synchronized in a simple cable configuration. Changing from a tabletop to 480mm (19in) rack mount configuration is as simple as adding the included mounting brackets.
- **Made tough for harsh environments:** QuartZ can be installed close to the probes, reducing cable length. No air conditioning is needed, saving in project complexity and installation costs.

QuartZ is the answer for complex and high-speed inspections and is optimally designed for the oil & gas, manufacturing, and transportation markets. QuartZ achieves an excellent balance between speed, power, and flexibility for the most complex inspection environments and applications.



PERFORMANCE AND SPEED

- **Parallel firing capability:** QuartZ supports 32:128 or 2×16:64 configurations for two simultaneous apertures on one or two probes.
- **Integrated probe splitter:** Connect two phased array probes without any additional accessories.
- **Two powerful conventional UT channels:** A full inspection configuration with two PA probes and two UT probes only needs one simple instrument.
- **High data throughput:** QuartZ can deliver up to 30MB/s of data throughput making all the difference for demanding applications.

INCREASE INSPECTION PRODUCTIVITY

- **High power phased array channels:** QuartZ incorporates a real 100V pulser for the phased array channels, ideal for the inspection of very thick or difficult to penetrate materials.
- **Automatic probe detection:** When using Eddyfi probes, QuartZ automatically detects the probe(s) and connection to help ensure you are using the right probe while simplifying traceability in the reporting process
- **Time reversal support:** Inspect various geometry-changing surfaces of composite materials without complex surface following mechanics or previous knowledge of the exact part shape

SCALABLE AND BUILT TO LAST

- **Integrated probe splitter:** For connecting two phased array probes without any additional accessories.
- **Scalable:** Up to 10 QuartZ units in parallel controlled by the same UltraVision—almost no inspection configuration is too big.
- **Easy integration:** Designed for integration, multiple QuartZ units can be synchronized in a simple cable configuration. Changing from tabletop to 48.3cm (19in) rack mount configuration is as simple as adding the included mounting brackets.
- **Made tough for tough environments:** QuartZ can be installed close to the probes, reducing cable length. No air conditioning is needed, saving on project complexity and installation costs.

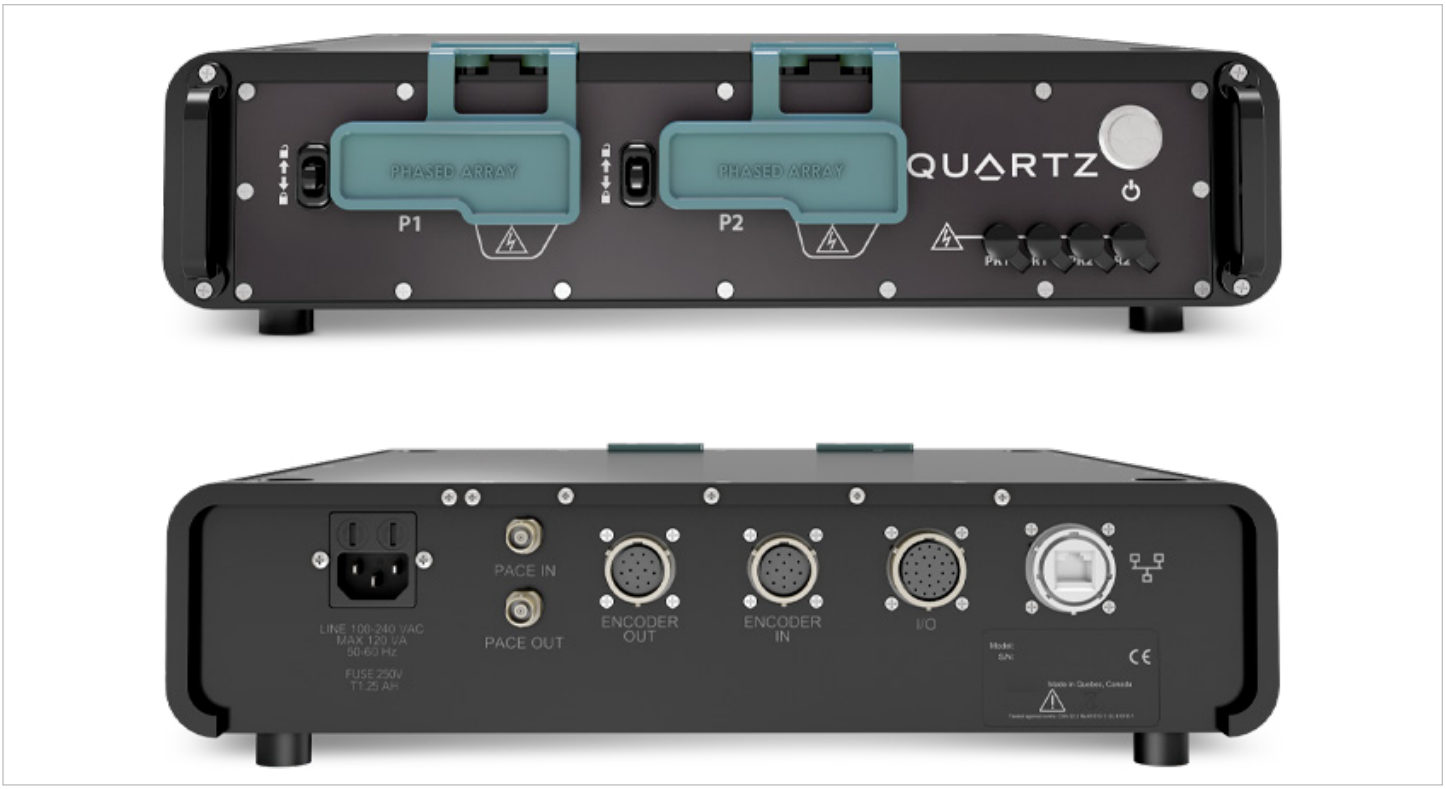


Figure 1: Easy mounting and simple cabling make QuartZ the ideal building block for any integration project. Encoder signals are received by one unit and relayed to the others in a multi-instrument configuration. Military-grade connectors ensure signal quality and robustness in almost any environment.

POWERED BY ULTRAVISION SOFTWARE

UltraVision allows preparing and implementing the full inspection process within the same software package, from

- Calibration
- Inspection design including ray tracing and beam simulation
- Advanced data management
- Assisted analysis
- Detailed reporting.

One UltraVision session can control up to 10 QuartZ instruments for adding parallel power to the inspection configuration.

INDUSTRIES AND APPLICATIONS

Manufacturing

Metal manufacturing requires providing high-quality parts for a very large range of applications. Cycle time minimization is critical for the optimization of production rates. QuartZ offers the right tools and scalability to address most applications.



Figure 2: Manufacturing factory.

Tubes, Pipes, and Plates

QuartZ allows creating the right solution for the inspection of tubes and pipes, plates, or forgings. Inline and offline applications are ideal for QuartZ, easily creating a complex inspection configuration when required.

Aerospace

The increasing use of composite parts that have complex and variable geometries creates inspection challenges. Time reversal is a real-time and adaptive technique that does not require knowledge of detailed component profiles. QuartZ and time reversal together simplify the inspection process of complex composite parts for rapid and reliable PAUT inspections without the need of complex surface following mechanics or previous knowledge of the exact part shape.



Figure 3: Composite inspection for aerospace industry.

Transportation

The transportation industry is especially concerned by security. Train wheels, axles, and rails need to be inspected at manufacturing and at regular intervals. QuartZ provides the tools for building the right solutions.



Figure 4: Train wheels axles inspection.

SPECIFICATIONS

INSTRUMENT

Dimensions (W × H × D)	490 × 420 × 90mm (19.3 × 16.5 × 3.5in)
Weight	8.34kg (18lb)
Voltage	120 VAC or 240 VAC
Frequency	50 or 60 Hz
Maximum power	75 VA

ENVIRONMENTAL

IP rating	Designed for IP65

PHASED ARRAY

Phased array channels	32:128 PR
PA firing modes	Up to 32 consecutive elements. Up to two apertures of 16 consecutive elements
Phased array connector	2 x ZPAC connector (custom ZIF with latch). Allows connecting 2 probes without splitter. Automatic probe recognitions (with Zetec probes).
UT channels	2 channels (in Pulse/Echo or Pitch/Catch configurations

PULSERS

Pulse width	25 ns to 500 ns
Pulse amplitude PA (at 50Ω)	35 V to 100 V
Pulse amplitude UT (at 50Ω)	50 V to 200 Vz

DATA ACQUISITION

A-scan length	Up to 16,384 points
Maximum number of focal laws	1024
Real-time averaging	1, 2, 4, 8, and 16
Data compression	1, 2, 4, 8, and 16
PRF	Up to 20 kHz
Parallel Firing	2 beams
Maximum number of samples	16384
Measurement gates	4 gates + 1 synchronization gate
Data throughput	Up to 30 MB/s
Maximum data file	20 GB
Digitizing frequency	25 MHz, 50 MHz or 100 MHz
Bandwidth (at -3 dB)	500 kHz to 18 MHz
Summed data amplitude resolution	16 bits
Filters	Analog/Digital band-pass, high-pass and low-pass
Gain setting range PA	70 dB (analog) + 30 dB (digital)
Gain setting range UT	70 dB (analog) + 24 dB (digital)

CONNECTIVITY

Data Interfaces	Ethernet 1000 Base-T
Encoder	2 axes (quadrature, clock direction)

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, QuartZ, 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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