



# QUARTZ

When speed matters.



# The Ideal Combination of Speed, Power and Flexibility

QuartZ is the latest member of Zetec's Ultrasonic Instruments product family. It is the answer to the requirements of complex and high-speed inspections. QuartZ is designed to perform in the harshest industrial environments without compromise.

QuartZ speed and robustness combined with UltraVision software legendary power and UltraVision Software Development Kit (SDK) flexibility offer the perfect solution for creating custom inspection solutions.

## Performance and Speed

**Parallel firing capability:** QuartZ supports 32:128 or 2x16:64 configurations, for two simultaneous apertures on one or two probes.

**High power phased array channels:** QuartZ incorporates real 100 V pulser for the phased array channels. Ideal for the inspection of very thick or difficult-to-penetrate materials.

**High data throughput:** QuartZ can deliver up to 30 MB/s of data throughput making the difference for demanding applications.

**Two powerful conventional UT channels:** A full inspection configuration of two PA probes and two UT probes only needs one simple instrument.

**Automatic probe detection:** When using Zetec probes, QuartZ automatically detects the probes connected ensuring the right probe is used and simplifying traceability up to the reporting process.

## The Most Advanced Inspection Features

**Time Reversal support:** Time Reversal allows the inspection of complex geometries and changing surfaces of composite materials by reducing the complexity of the mechanical scanners.

**UltraVision 3® controlled:** UltraVision 3 software performs all activities needed in an inspection process within the same package:

- Designing the probe and modelling the acoustic field;
- Defining the specimen, parts to inspect and scan plan;
- Calibration and inspection;
- Analysis and reporting.

All-in-one seamless integrated package.

## 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 19" 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.



# QuartZ 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.

## 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.



## Transportation

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



# Technical Specifications

<b>ULTRASONIC CONFIGURATION</b>	
Phased array channels	32:128 PR
PA firing modes	Up to 32 consecutive elements Up to 2 apertures of 16 consecutive elements
Phased array connector	2 x ZPAC connectors (custom ZIF with latch)
UT channels	2 channels (in Pulse/Echo or Pitch/Catch configurations)
<b>PULSER</b>	
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 V
<b>DATA ACQUISITION</b>	
A-scan length	Up to 16,384 points
Maximum number of focal laws	1,024
Real-time averaging	1, 2, 4, 8 and 16
Compression	1, 2, 4, 8 and 16
PRF	20 kHz
Parallel firing	2 beams
Maximum number of samples	16,384
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	100 dB
Gain setting range UT	94 dB
<b>INTERFACING</b>	
Data interfaces	Ethernet 1000Base-T
Encoder	2 axes (quadrature, clock direction)
<b>HOUSING</b>	
Size (H x W x D)	420 x 490 x 90 mm (16.5 x 19.3 x 3.5 in.)
Weight	8.34 kg
Air intake	No
Environmental protection	Designed for IP 65
<b>GENERAL SPECIFICATIONS</b>	
Voltage	120 VAC or 240 VAC
Frequency	50 Hz or 60 Hz
Maximum power	75 VA

# QuartZ – UltraVision and SDK

**UltraVision delivers the full power of QuartZ offering a 3D work environment with a high-speed and powerful solution.**

UltraVision allows preparing and implementing the full inspection process within the same software package, from the inspection design including ray tracing and beam simulation to calibration and inspection, advanced data management, assisted analysis and detailed reporting. One UltraVision session can control up to 10 QuartZ instruments for adding parallel power to the inspection configuration.

**UltraVision 3 SDK is a source code interface that gives access to the UltraVision main functionalities and that enables UltraVision customization:**

- Third parties can develop their tools/components that are incorporated inside UltraVision 3 software;
- Allows to go as far as removing most of the references to Zetec and UltraVision in the UI (User Interface) while Zetec UltraVision 3 engine is still running;
- Permits embedding customer features inside UltraVision;
- SDK supports C#, C++/CLI or VB .Net programming environments.





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.



Zetec holds ISO 9001 and ISO/IEC 17025 certifications

