

# Quartz

High-speed, Industrial Phased Array Instrument



# SPEED UP COMPLEX ULTRASONIC INSPECTIONS

QuartZ is the answer for complex and high-speed inspections. 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 2x16:64 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 Zetec 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



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.

# THE IDEAL COMBINATION OF SPEED, POWER AND FLEXIBILITY

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.

## 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.

## 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.

### 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.

### 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.



# SPECIFICATIONS

## INSTRUMENT

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

## ENVIRONMENTAL

IP rating	Designed for IP65
Operating temperature	
Storage temperature range	

## 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)

