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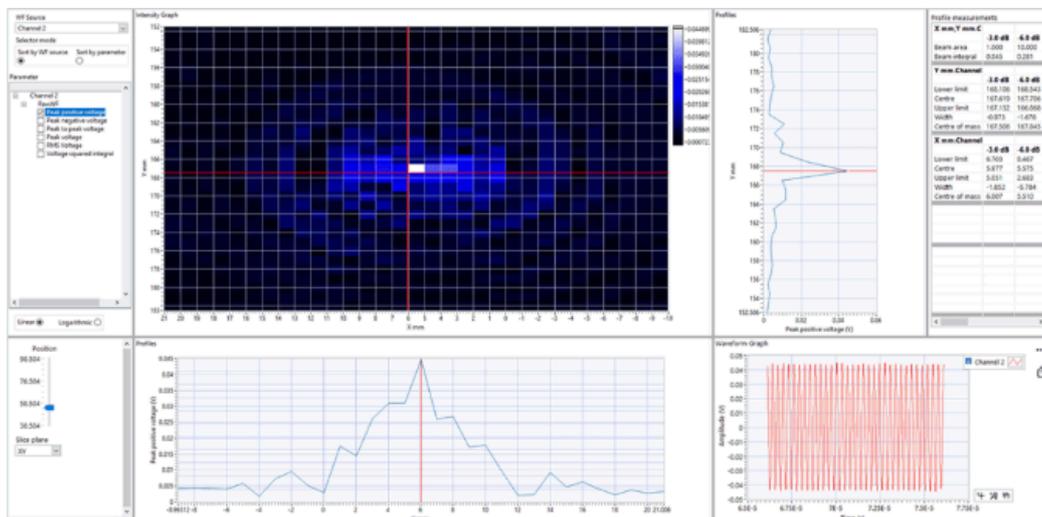
UMS4 Ultrasonic scanning system

What's new?

Introducing 3D scanning

UMS4 now supports three-dimensional acoustic field visualisation, enabling users to explore volumetric datasets with intuitive slice-plane selection and position control.

Users can select any two axes to display as an intensity map while interactively sweeping through the third axis, making it easier to understand complex acoustic fields, identify focal regions and interrogate spatial variations in pressure and intensity with confidence.



graphs, enabling detailed exploration of acoustic field structure and focal characteristics.

By providing access to the full three-dimensional structure of the acoustic field, 3D scanning helps users detect asymmetries, secondary lobes and features that may not be apparent in planar or single-axis measurements. This allows more informed assessment of transducer performance, improved confidence in characterisation results and reduced risk of overlooking critical acoustic behaviour.

Summary of UMS4 features

UMS4 is supplied as a complete system, including a water tank, precision motion stages, modern digital oscilloscope and a dedicated PC with Precision Acoustics' in-house developed software for acquisition and post-processing. The software has been designed to streamline the acquisition, visualisation, processing and reporting of acoustic field data, reducing workflow complexity by integrating these functions into a single package.

By combining these processes within a single, integrated system, UMS4 reduces setup complexity, minimises user intervention and improves measurement consistency. This enables users to acquire high-quality data efficiently, visualise results clearly and generate repeatable, traceable outputs suitable for research, development, quality assurance and regulatory reporting.

Ultrasound measurements rely on the ability to accurately measure the acoustic field. To facilitate this, UMS4 incorporates the ability to conduct:

- computer controlled movement of XYZ axes (+any optional rotational axes) and data acquisition
- automatic alignment on the acoustic axis of a transducer
- beam profiling and planar scanning with real-time display
- focal region localisation and characterisation
- correction for hydrophone frequency response and calculation of pressure waveforms



If you have a specific measurement requirement, talk to us about custom UMS configurations, including alternative tank sizes, additional axes or bespoke software functionality.

For further information contact our systems team at systems@acoustics.co.uk, visit www.acoustics.co.uk or call +44 (0)1305 264669 to discuss your requirements.

Did you know ...

At a frequency of 1 MHz, the wavelength of ultrasound in water is approximately 1.5 mm, while at 10 MHz it reduces to around 0.15 mm. At the upper end of UMS4's operating range, 60 MHz corresponds to a wavelength of approximately 25 μm . To accurately characterise acoustic fields, positional repeatability must be less than half the smallest wavelength of interest.

With a positional repeatability of $\pm 5 \mu\text{m}$, UMS4 meets this requirement at the highest frequency of its operating range, ensuring that positioning uncertainty does not dominate measurement error. This level of repeatability allows customers to trust that observed changes in pressure or intensity are due to the acoustic field itself, rather than limitations of the measurement system, supporting confident comparison between scans, devices and test conditions.

Visit our website for further information on our UMS4



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Our mailing address is:

Precision Acoustics Ltd

Hampton Farm Business Park, Higher Bockhampton, Dorchester, DT2 8QH. United Kingdom

Our telephone number is:

+44 (0) 1305 264669

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