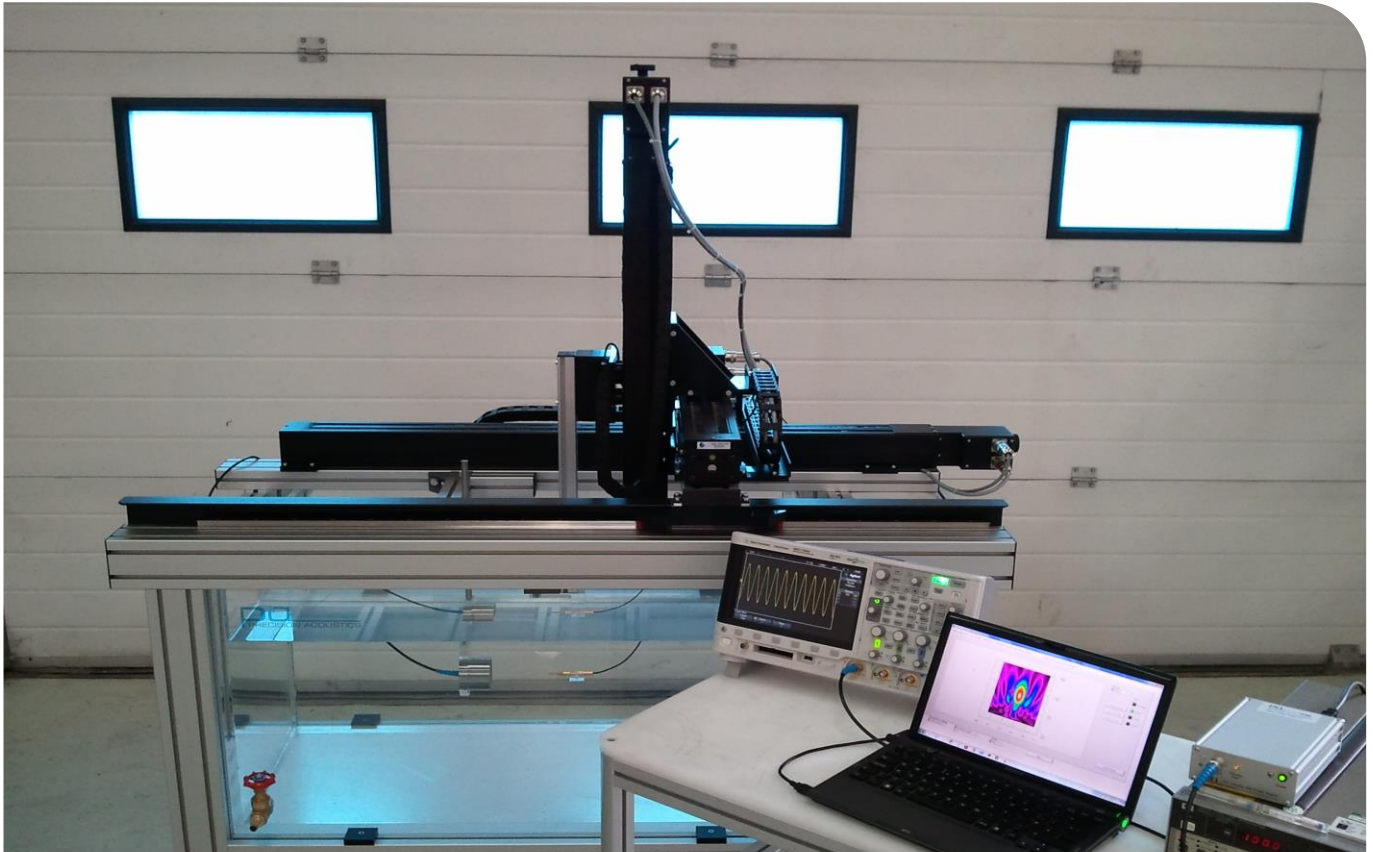


# UMS Scanning System



UMS is a fully automated scanning system that has been specifically designed to automate the repetitive tasks of acquisition, display, storage and processing of data associated with the measurement and mapping of acoustic fields.

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

- computer controlled movement of XYZ axes and data acquisition
- automatic alignment on the acoustic axis of the 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
- calculation of derived intensity, power and index parameters for regulatory reporting
- preparation and running user-defined measurement sequences (scripts)
- direct-to-PDF report generation

## TYPICAL SYSTEM SPECIFICATION

Water tank dimensions	1 m (L) x 0.6 m (W) x 0.6 m (H) <sup>1</sup>
Linear motion range	0.6 m x 0.4 m x 0.5 m
Ideal frequency range	0.5 MHz <sup>2</sup> – 60 MHz
Number of motorised axes	3 Linear axes, XYZ (plus up to 2 rotational axes if required)
Positional error / Linear repeatability	+/- 5 µm (via load-mounted encoders)
Linear resolution	1 µm
Angular resolution	0.01° (optional)
Measurement orientation	Horizontal or vertical/top-down (user configurable)
Working speed	20 mm/s
Working load	Up to 15 kg
Included hardware	L-shaped hydrophone mount & multipurpose transducer mount
Data acquisition	Via modern digital oscilloscope (supplied as standard)
System software	PC supplied with preloaded applications for acquisition and post processing of data

## AUTOMATIC CALCULATION OF

Peak positive and negative pressures	$I_{TA}$ , $I_{TP}$ , $I_{PA}$ and peak/averages e.g. $I_{SPTA}$	Pulse duration		
Beam width, area and focal length	Power	MI	$f_{awf}$	Frequency spectrum

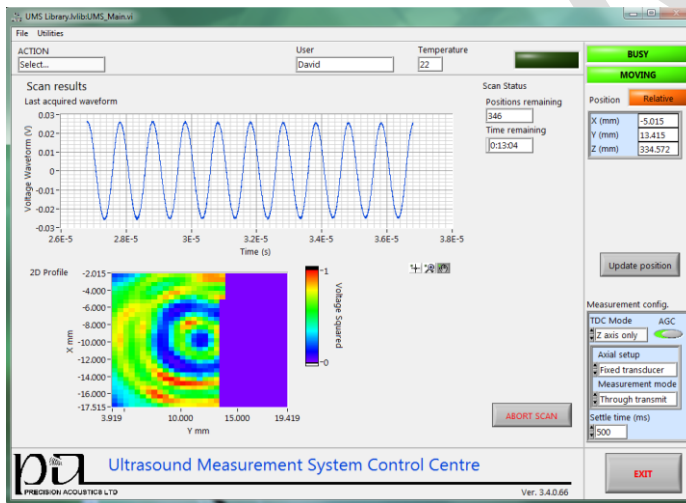


Figure 1 – UMS acquisition interface

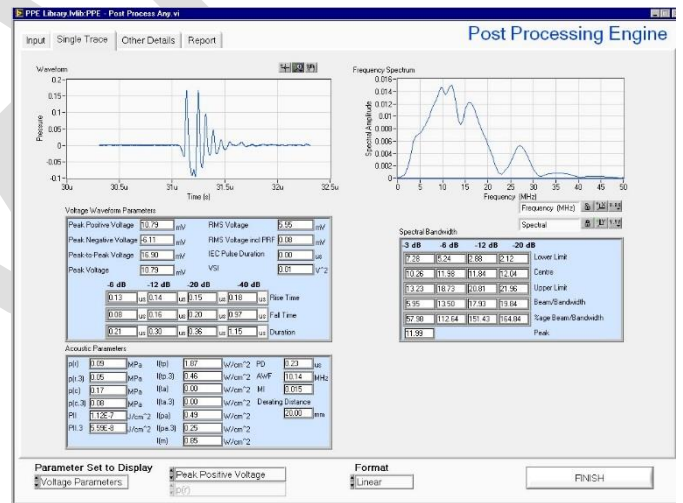


Figure 2 – UMS post-processing interface

*All information is based on results gained from experience and tests, and is believed to be accurate but is given without acceptance of liability for loss or damage attributable to reliance thereon as conditions of use lie outside the control of Precision Acoustics Ltd.*

<sup>1</sup> Other sizes from 0.4 m x 0.4 m x 0.3 m up to 3 m x 2 m x 2 m are available upon request.

<sup>2</sup> Lower frequency limit can be extended with either larger tanks or with absorbing tank linings