PRECISION ACOUSTICS
A Coda Octopus Company

PowerDrive System
Modular & Rack Mountable Series

The Precision Acoustics PowerDrive system is a modular platform enabling between 4 and 32 channels of waveform synthesis and amplification targeted at high power applications, which is scalable and configurable with up to 8 stacked units utilising a rack mountable design to provide scalable performance to suit different needs. With up to 20 W electrical power per channel available for indefinite continuous wave (CW), pulsed, or arbitrary waveform capability the driver offers a robust solution for use with high power transducers and arrays. All channels are individually controllable via PC and synchronised for accurate phase control to < 0.03 λ precision over the whole 250 kHz to 20 MHz bandwidth allowing use as a phased array controller for beam steering and focusing.

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Product Overview

The Precision Acoustics PowerDrive System provides a modular approach to controlling high power transducer arrays.

Supplied as a 32-channel control system linked to individual blocks of 4-channel signal synthesis and amplification, the driver can be configured in 4, 8, 12...32 channel options for the ultimate choice in modularity.

Capable of supplying a continuous or pulsed sinusoidal drive or an arbitrary waveform input, the multi-channel driver is software controlled. Once connected to a PC, waveform and timing commands can be sent through the Array-Drive software supplied.

High frequency digital clock signals from the control box allow precise timing and synchronization of the waveforms supplied to each channel, allowing signal phase to be accurately controlled to within fractions of a wavelength. [Figure 3]

With integrated thermal overload protection and all channels rated for simultaneous and continuous use at maximum power the phased array driver is one of the most robust systems on the market for user-configurable multi-channel transducer driving and control.

Combining its modular approach and robust construction, the Precision Acoustics PowerDrive System is the ideal choice where flexibility and versatility are key for both research and development applications and for industrial users targeting reliability in a demanding environment.

Benefits & Features

- 4 to 32 Channels
- Up to 20W per Channel
- Modular and Scalable
- 50 Ohm Output Impedance
- Robust and Reliable
- ArrayDrive Software with Programmable Delay Laws
- 19" Rack Mountable
- Wideband 250 kHz to 20 Mz
- CW, Pulsed or Arbitrary Waveform
- High Fidelity Class AB Amplifiers
- <0.03 λ Delay Resolution
- Integrated Thermal Protection
- Trigger Output for Hydrophone Measurement
- Will Survive Capacitive, Open or Short Circuit Loads

Applications

- HIFU Transducers
- Industrial Ultrasound
- Phased Arrays
- Sonochemistry
- Research and Development
- Cavitation Experiments

Hardware Architecture

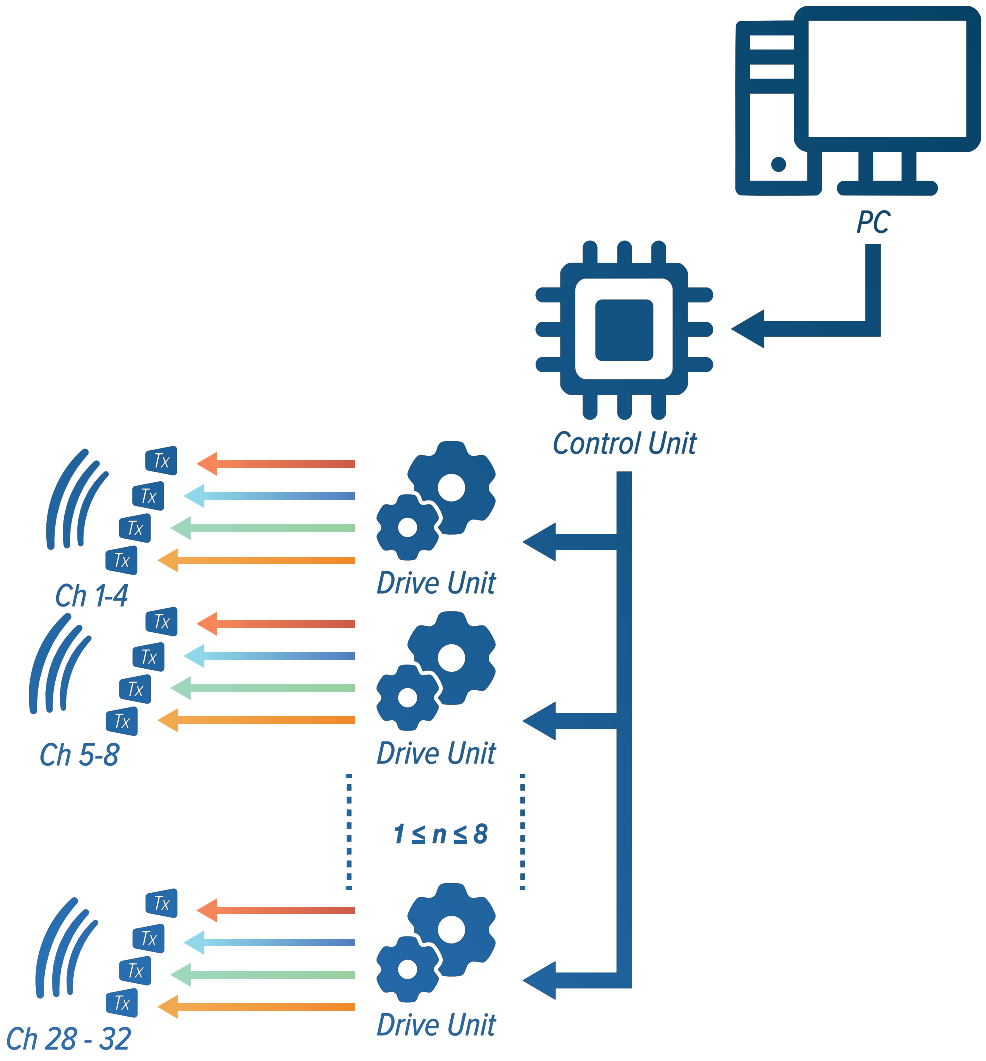


Figure 1. Schematic of the Hardware Architecture

User Interface

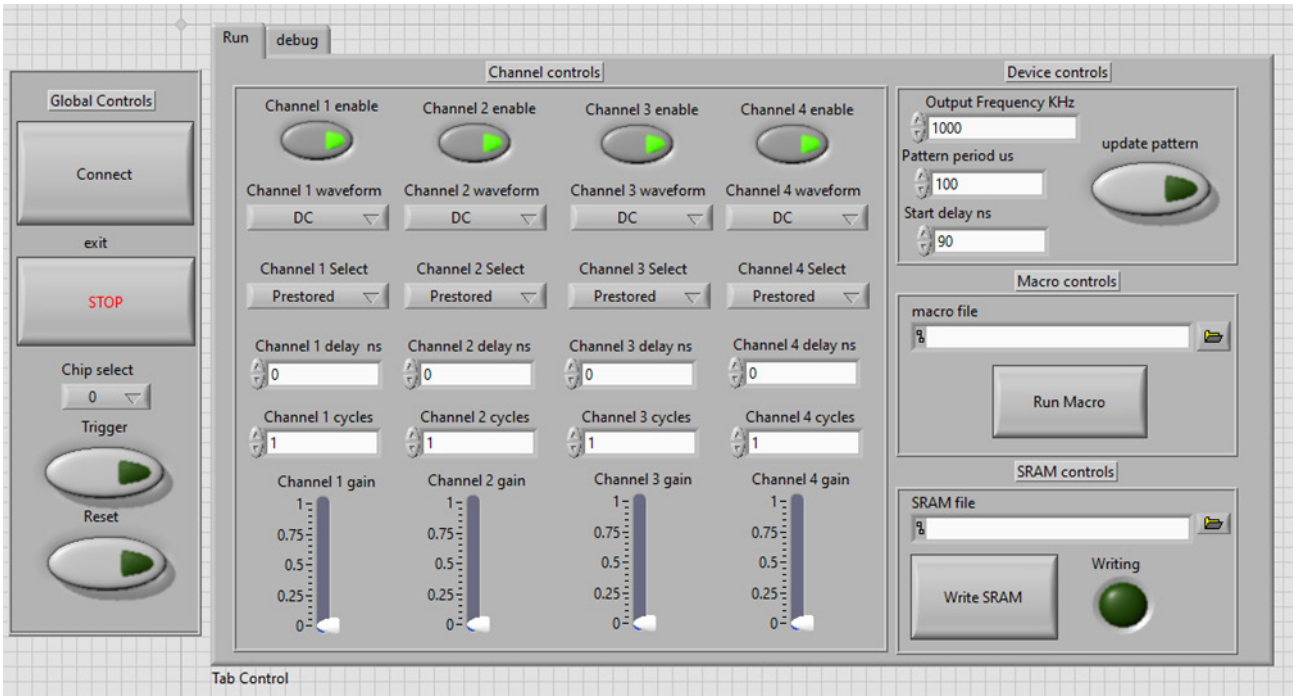


Figure 2. 4-channel module user interface. (Note: software under development and likely to change)

Timing and Phase Shift Specification

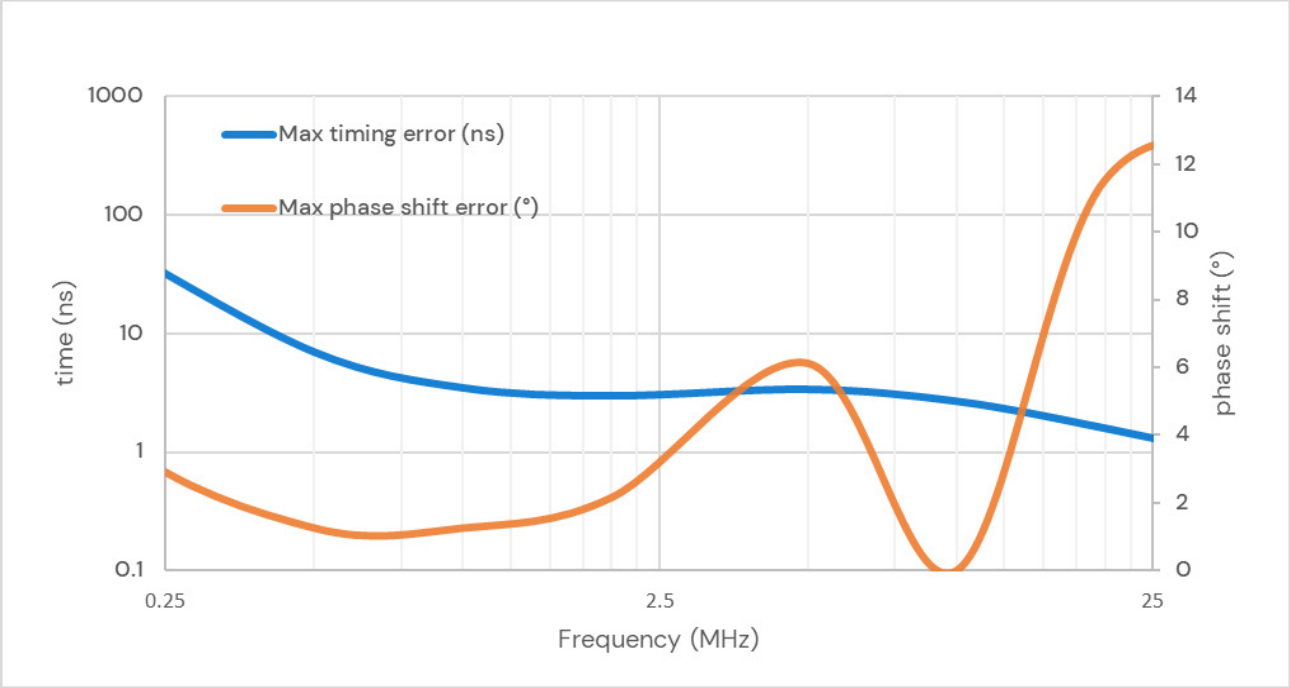
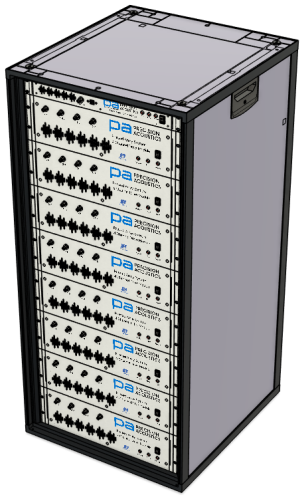


Figure 3. Timing and phase shift uncertainties over the frequency band 0.25 to 25 MHz, as measured from a 4-channel drive and control unit

Visual Mockup of Rack Mounted Configuration



Physical Properties (Single 4-Channel Drive Unit)

Property	Value
Dimensions	19" Rack Mounted, 3U enclosure (drive module) 19" Rack Mounted, 1U enclosure (control module)
Weight	8.5 kg (drive module) 3 kg (control module)
Voltage	110/240 Vac
Power Draw	300 W (max. typical) (drive module) 10 W (max. typical) (control module)
Fuse	4 A - 240 V, 10 A - 110 V (drive module)

PC Requirements

Processor	1 GHz 64-bit (x64) or higher (1.5 GHz 64-bit (x64) recommended
RAM	2 GB (8GB or higher recommended)
Disk Space	10 GB (20 GB or higher recommended)
Screen Resolution	1024 x 768 Pixels (1366 x 768 or higher recommended)
.NEW Framework	.NET Framework 4.6.2 or later
USB	2.0 or later