

Drive Electronics



FEATURES

- Full-speed USB interface (150 kB/s transfer rate means up to 150 8-bit channels per millisecond)
- Compact package (4" x 6" x 8")
- Based on the 32-channel high voltage Supertex amplifier chip
- Continuously tunable from 0 to 295V with 8-bit precision (10, 12, 14, or 16 bits digital to analog converters are possible via special order)
- Each drive electronics package comes with a power supply board that converts 12V DC input to the necessary supply voltages for the digital, analog, and amplifier electronics.
- Power supply board uses a microcontroller to guarantee proper power sequencing of the voltages to minimize risk of damage to amplifier chip
- Built-in short circuit protection
- Up to three 32-channel high voltage drive boards can be connected to a single power sequencer to make a 96 channel drive electronics unit
- Capable of driving a 3nF load
- Each 32-channel drive electronics board has an integrated microcontroller making it possible to integrate control algorithms onto the board
- Microsoft Windows operating system basic software package and external interface provided

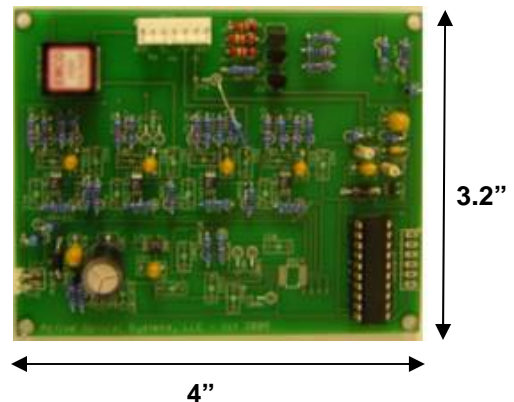
APPLICATIONS

- MEMS Electrostatic Actuators
- Piezoelectric (PZT) Actuators
- Electrostrictive (PMN) Actuators

Packaged Drive Electronics



Power Supply Board



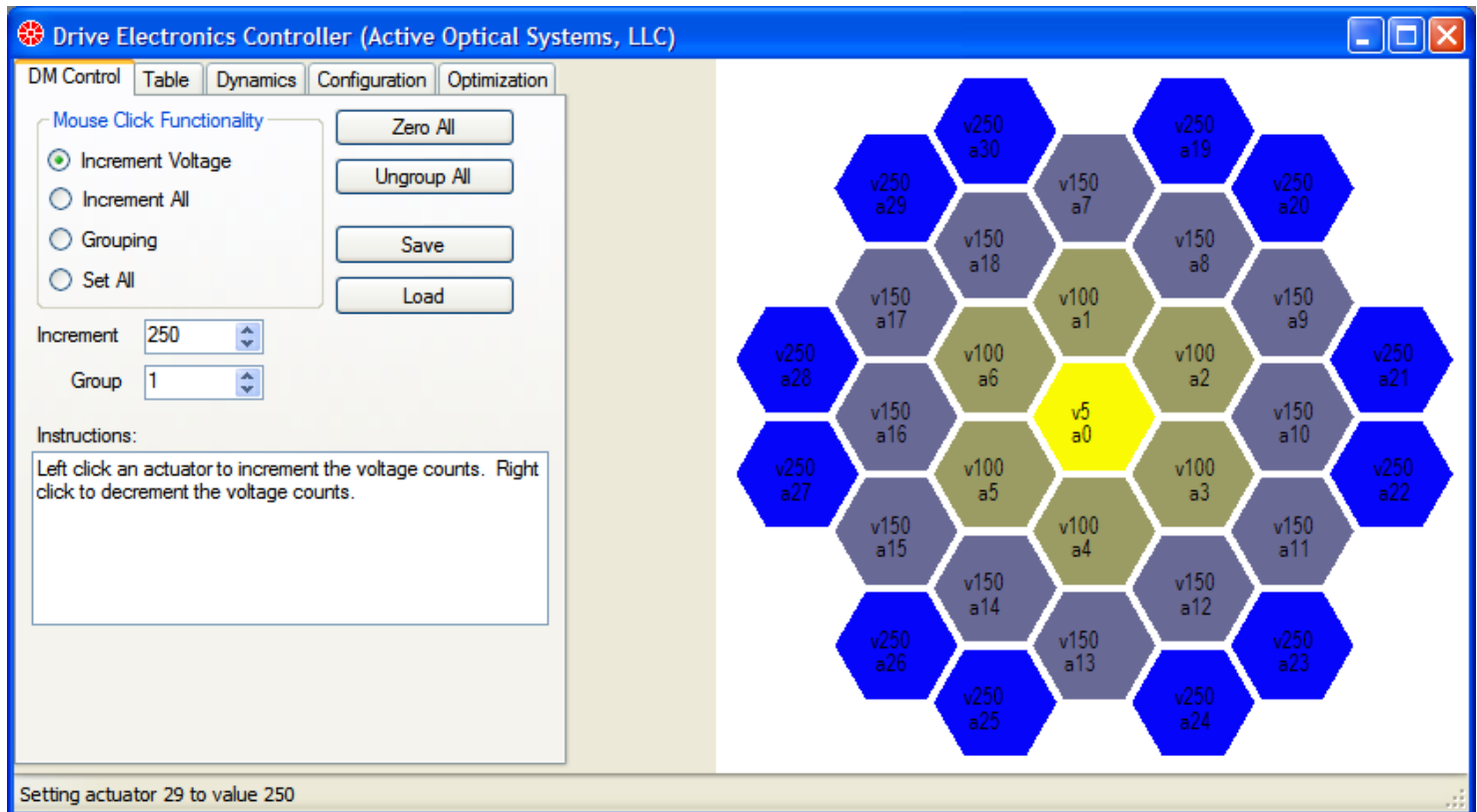
DESCRIPTION

This drive electronics packages provides a digital USB interface from a control computer to a number of different types of actuators requiring high voltage and low current like electrostatic, piezoelectric, or electrostrictive actuators. The drive electronics consist of a power supply board and digital drive electronics board(s). Each drive electronics board is capable of driving 32 channels of high voltage and can be combined with a single digital interface to have up to 96 channels of high voltage control. The drive electronics board was designed with on-board DACs that are scalable in digital resolution from 8 bits to 16 bits in 2-bit increments to provide the option of higher resolution for some applications.

Specifications

Parameter	Min	Typical	Max	Notes
Update Rate (kHz)		1.0		96 channels
Number of Channels per Power Supply Board	32		96	More channels can be added
Capacitive Load (nF)			3.0	
Slew Rate (V/ μ s)		2.2		No load
Amplifier Chip Power Supply Rejection Ratio (dB)	-40			
Package Size (inches)		3x6x6		
Computer Interface		USB		Virtual COM Port in Windows

Windows Software Interface



The screenshot displays the 'Drive Electronics Controller' software interface. The window title is 'Drive Electronics Controller (Active Optical Systems, LLC)'. The interface is divided into several sections:

- DM Control Panel:** Includes tabs for 'Table', 'Dynamics', 'Configuration', and 'Optimization'. Under 'Mouse Click Functionality', there are radio buttons for 'Increment Voltage' (selected), 'Increment All', 'Grouping', and 'Set All'. Below these are 'Zero All', 'Ungroup All', 'Save', and 'Load' buttons. There are also dropdown menus for 'Increment' (set to 250) and 'Group' (set to 1).
- Instructions:** A text box stating: 'Left click an actuator to increment the voltage counts. Right click to decrement the voltage counts.'
- Actuator Array:** A central graphic showing a hexagonal grid of 31 actuators. Each actuator is labeled with its voltage and address, such as 'v250 a29', 'v150 a7', and 'v5 a0'. The central actuator 'v5 a0' is highlighted in yellow.
- Status Bar:** At the bottom, it reads 'Setting actuator 29 to value 250'.