

# SMD210 Stepper Motor Drive

## Dual sequential stepper motor controller

The SMD210 Vacuum-Compatible Stepper Motor Drive is designed to match AML motors. Two motors may be driven sequentially under host computer control or by an internally stored program. Manual operation is also available from the front panel switches or a hand-held joystick.



## Features

- Drives 2 UHV stepper motors sequentially.
- Advanced low-power drive techniques for minimum motor temperature rise and outgassing and maximum operating time.
- Phase currents can be set from 0.1 to 1A in increments of 0.1A.
- Holding torque can be controlled independently of dynamic torque under program control, to reduce power.
- Full, half,  $\div 4$ ,  $\div 8$  step drive modes with automatic transition at user selectable speeds. (Stops on full step positions only. Micro-stepping used for control of resonance and smoother step transition.)
- Thermocouple amplifiers (type K) for motor temperature indication, protection and control of motor bakeout.
- RS232C interface for host computer control. Drive programs can be developed and run from the computer console (Remote Program Control) or downloaded for stand-alone operation (Internal Program Control).
- Motors may be operated manually with the front panel 'STEP' switches or with a joystick. Single-step or multiple-step operation with smooth acceleration to the selected speed.
- 3 user inputs for interaction with program execution, in addition to two "End of travel" inputs for each motor.
- 3 user outputs for switching under program control.
- Simple control language has many powerful commands which allow control of all aspects of motion or position. Conditional operation, loops and jumps are possible.
- 1U high full-width, steel-cased instrument for easy rack-mounting.
- Operates from 100 to 240V, 50/60 Hz supply.

## SPECIFICATIONS:

Switch-mode current-regulating power stage with a nominal source of 67volts, for bipolar control of 2-phase vacuum stepper motors.

### Command Summary

Ax	Set user output x
Bx	Select motor x
b	Bakeout selected motor. (175°C)
Cx	Clear user output x
Dx	Delay x milliseconds, where x is 1 to 65535
E	Start execution of a resident program
F	Status request. (Busy, ready or error condition)
fx	Preset position counter to x. (Sets a reference location at x=0)
G+/-x	Go to a defined location x steps from a reference location
g+/-	Rotate at preset speed indefinitely in the specified direction
H+/-	Go to a location 8 steps inside the specified (EOT+ or EOT-) limit switch
hx,y	Set the power reduction parameters (time and phase current after hold time)
In	Initialise user output or position counter, as defined by n
J,j	Jump to another part of the program
K	Abort program execution
Ln	Loop through a sequence n times, where n is 1 to 255
M	Set the step rates for automatic ministep mode transition
P	Enter or exit the programming mode of operation
Q	Read the program resident in memory back via RS232C
Tx	Define the current slew speed in steps per second, where x is between 10 and the maximum rate defined by the x command (<6000)
Ux	Until. Continue executing the resident program until user input x is "low"
Vx	Status request. (Position, user inputs, temperature, software version, dynamic parameters)
Wp	Wait for user input p to go "low" before executing the next instruction
Xx,y,z	Define the acceleration / retardation parameters, where x is the start speed, y is the maximum slew speed and z is the number of steps in the acceleration or retardation ramp
Z	Reduce speed to zero with the defined retardation
+/-x	Rotate x steps in the defined direction, where x is between 1 and 10E+6

The above is given for information purposes only and is not intended to be a rigorous specification for programming purposes

### Order Code

SMD210	Dual UHV-Compatible Stepper Motor Drive
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### Related products

C14.1, C17.1, C17.2	UHV Compatible Stepper Motors
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MLF18F	18-way Feedthrough (CF70)
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MLF18NBL	Lead. SMD210 to MLF18F
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SMDJOY	SMD210 Joystick
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