

High performance Micro-stepping drive P7000



STEP MOTOR DRIVE P7000

Like all Danaher Motion step motor drives the P7000 series includes optically isolated step and direction inputs. The drives are configured by either on-board switches, or via the P7000 Graphical User Interface (GUI). A full line of standard Pacific Scientific stepper motors can be set up with the on-board switches. The GUI is perfect when using an alternative motor type or one with a unique winding. There are a number of advanced features offered in the P7000 systems making it the best choice to meet your application requirements.

- ◆ **Motor Stall Detection w/o Feedback**
- ◆ **Auto-Smoothing coarse steps to micro-steps**
- ◆ **Motor Wave Shape Tuning for ultra smooth low speed operation**
- ◆ **Mid-Band Anti-Resonance Control**
- ◆ **Idle & Rest Current Adjustment**
- ◆ **Internal Motion Engine**



Stall Detection

Digitally configured via DIP switches or through the GUI. Motor Stalling or shaft displacement at rest can be detected. This is the only reliable stall detection method available to date which does not require a feed back device.

Multi-Stepping

Also known as auto-smoothing. The P7000 drive accepts standard full step pulse commands from the indexer and inserts fine micro-steps to smooth coarse low speed motion. This allows you to significantly upgrade machine performance without having to redesign machine control architecture.

Motor Wave Shape Tuning

Advanced current auto-tuning techniques provide extreme low speed smoothness comparable to many servo systems, but at a fraction of the cost. Whether using a standard Pacific Scientific stepper motor or another type the drives probe the motor to determine its electrical and mechanical characteristics. The current control algorithms are then optimized to the motor.

Mid-Band Anti-Resonance Control

All open loop stepper systems inherently are susceptible to mid-speed torque loss due to mechanical resonance in the system. The P7000 utilizes pulse placement techniques to minimize mid-speed torque loss.

Current Reduction

A feature that reduces the phase current to the motor when no motor motion is commanded (idle condition) for a specified period of time. Current reduction reduces motor heating and allows high machine throughputs from a given motor. The current can be scaled from 0...100% in 1% increments.

Internal Motion Engine

A Motion Node option with standard ModBus RTU interface adds enhanced indexing capabilities at significant savings when compared to the cost of a standard indexer. This allows the user to store up to 63 independent moves which can be executed based upon the input configuration or through the serial port. Moves can be chained conditionally together creating the ability to generate numerous motion profiles. The GUI includes a "Fill in the Blank" Wizard to assist you in developing your profiles.

Features

- ◆ Open Loop Stall Detect™ (OLSD™) allows detection of a stalled motor without an encoder or resolver. It can also detect the motor position shifts while at rest.
- ◆ Multi-Stepping™ allows low resolution step input = 25,600 microsteps out. For full stepping commands with smoothness of micro-stepping
- ◆ Dynamic Smoothing™ rounds the edges of the move profile (pseudo-S curve) Minimizes Jerk during accel.
- ◆ Xtreme Smoothness™ eliminates the motor's natural resonance speeds. Provides more usable torque through speed range
- ◆ Anti-Resonance best performing and largest range in the industry (7.2°) Provides optimum torque and nulls mid-range instability
- ◆ Programmable jog function with dual speed settings
- ◆ Current reduction modes with programmable time and reduction amount
- ◆ Nine programmable inputs allow Jog+, Jog-, Jog Speed, EOT +, EOT-, Move Select, Soft reset, start move, Start/Stop pulse, Stop move
- ◆ Fault Output
- ◆ All I/O user configurable to active high or active low operation 5 -24 VDC
- ◆ Compact size and ability to mount tightly together
- ◆ Agency approvals (pending) UL recognized, 508C, Type R file #E137798; CE compliant: EMC standard EB61800-3 and safety standard EN50178
- ◆ Flash Firmware for field retrofitable upgrades
- ◆ Diagnostic LEDs provide easy drive assessment
- ◆ RS232
- ◆ Configurable Software for custom motor options and fine tuning
- ◆ Motion Node allows simple indexing up to 63 moves

Options

- ◆ Serial Cable, Connector kit
- ◆ DeviceNet connector option Phoenix or Euro position node
- ◆ DeviceNet with indexing
- ◆ CANopen with indexing

Drive Names

DC Step Drive

Modular Micro-stepping drive for operation with NEMA size 17, 23 & 34, 2 phase stepping motors. This modular package operates over a 20-75 Vdc and be configured up to 5A rms per phase.

- ◆ P70530-SDN : DC drive, Step & Direction base drive
- ◆ P70530-PNN : DC drive, Step & Direction base drive with Position Node
- ◆ P70530-DNE* : DC drive, DeviceNet with Indexing, Phoenix DN connector, and encoder option
- ◆ P70530-DNE2* : DC drive, DeviceNet with Indexing, Euro DN connector, and encoder option
- ◆ P70530-CNE* : DC drive, CANopen with Indexing, Phoenix DN connector, and encoder option

AC Step Drive

Self contained Micro-stepping drive for operation with NEMA size 23, 34 & 42, 2 phase stepping motors. This contained package is powered at 120 or 240 Vac and can be configured up to 3A rms per phase.

- ◆ P70360-SDN : AC drive, Step & Direction base drive
- ◆ P70360-PNN : AC drive, Step & Direction base drive with Position Node
- ◆ P70360-DNE* : AC drive, DeviceNet with Indexing, Phoenix DN connector, and encoder option
- ◆ P70360-DNE2* : AC drive, DeviceNet with Indexing, Euro DN connector, and encoder option
- ◆ P70360-CNE* : AC drive, CANopen with Indexing, Phoenix DN connector, and encoder option

Rated data	DIM	P70530	P70360
Rated supply voltage range	V	24 ... 75 =	120 / 240 ~
Phase current	Arms	5	3
Peak current	Arms	7.1	4.2
Dedicated Inputs	-	+/- Enable, +/- step&dir, 5VDC TTL	+/- Enable, +/- step&dir, 5VDC TTL
Idle current reduction	Integer	0...100%	0...100%
Step resolution	step/rev.	200...25600	200...25600
Programmable Inputs	-	9 configurable	9 configurable
Fault Output	-	open coll., 5...24VDC	open coll., 5...24VDC
Ambient temperature	°C	0...45	0...45
Chassis temperature	°C	max 70	max 70
Motor size	-	NEMA 17, 23, 34	NEMA 23, 34, 42
Speed Range	rev/s	0...50	0...50
Motor Inductance Range	mH	0,8...10	50...200



DeviceNet™



(pending)



Dimensions

	P70530	P70360
Height	144 mm	170 mm
Width	44,3 mm	52,3 mm
Depth without connectors	112,5 mm	132 mm
Depth with connectors	< 150 mm	< 170 mm

STEP MOTOR DRIVE P7000

Danaher Motion introduces Pacific Scientific's P7000 Series Step Motor Drives. Previously unheard of stepper features allow the P7000 to provide true servo-like performance at a fraction of the cost.

The P7000 Step motor drives are the next generation of Danaher Motion's line of digital step motor controls. They bring you a unique level of system smoothness, functionality, high-speed performance and innovation unmatched in the industry. Available for AC or DC operation, the P7000 is designed to power any 2-phase NEMA step motor. Its unique features make it an ideal solution for single or multi-axis applications that require high-speed performance or low speed smoothness.

DC step Drive

The P70530 DC step drive is designed to power any 2-phase NEMA 17...34 frame motor. User supplied regen circuitry is required for excessive regen.

With a wide input voltage range of 24-75 Vdc the P70530 is ideally suited to meet your multi-axis application requirements.

AC step drive

The P70360 AC step drive is compact yet loaded with power. It will power any 2-phase NEMA 23...42 frame motor. A built in regenerative circuit dissipates regenerative energy.

With a standard input voltage of 120 or 240 Vac, this product is a perfect choice to apply anywhere throughout the world.





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