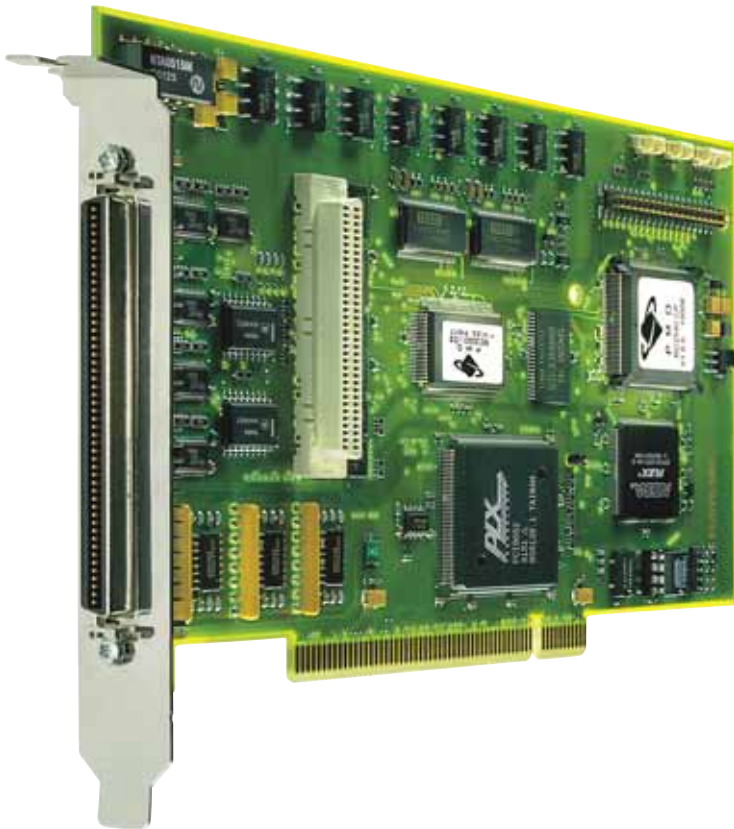


POSYS® 9xx
PCI-Bus Motion Controller for up to
4 Axes for Servo and Stepper Motors



- ✓ Available in 1, 2 and 4 axes configurations
- ✓ Motion profiles include S-curve, trapezoidal, velocity contouring, electronic gearing and optional linear/circular interpolation.
- ✓ Advanced PID filter with velocity and acceleration feedforward, bias offset and 32-bit position error.
- ✓ Velocity, acceleration and position changes on-the-fly for trapezoidal and velocity-contouring profiles.
- ✓ Incremental encoder quadrature input and optional parallel input for absolute encoder or resolver.
- ✓ 512KB on-board memory to store complex motion sequences and trace variables
- ✓ Trace capabilities for system performance checks, servo-tuning, maintenance and diagnostics. Uses onboard memory
- ✓ Encoder rate of 5.0 Mcounts/sec or 160 Mcounts/sec w/ parallel word feedback devices.
- ✓ 10-bit 20 kHz PWM or 16-bit DAC motor control output to amplifier for servos. Up to 5 MHz pulse and direction output for steppers.
- ✓ Advanced breakpoint capability allows precise sequencing of events.
- ✓ PLC-style programmable inputs and outputs, including a per-axis programmable input and output.
- ✓ 8 inputs, 8 outputs, 4 amplifier enable outputs, 8 general-purpose analog inputs
- ✓ Two-directional limit switches, index input, and home/high speed latch input indicator per axis.
- ✓ Axis settled indicator and tracking window in addition to automatic motion error detection.

Specifications

- Available configurations:
 4 axes (POSYS® 904, 914, 924, 934, 944, 954, 964, 974, 984), 2 axes (POSYS® 902, 912, 922, 932, 942, 952, 962, 972, 982), 1 axis (POSYS® 901, 911, 921, 931, 941, 951, 961), half size PCI-Bus card pnp
- Operating modes:
 Closed loop (motor command is driven from output of servo filter)
 Open loop (motor command is driven from user-programmed register)
- Communication modes:
 16/16 parallel
- Position range:
 -2,147,483,648 to +2,147,483,647 counts
- Velocity range:
 -32,768 to +32,767 counts/sample with a resolution of 1/65,536 counts/sample
- Acceleration and deceleration ranges:
 -32,768 to +32,767 counts/sample² with a resolution of 1/65,536 counts/sample²
- Jerk range:
 0 to ½ counts/sample³, with a resolution of 1/4,294,967,296 counts/sample³
- Profile modes:
 S-curve point-to-point (Velocity, acceleration, jerk and position parameters)
 Trapezoidal point-to-point (Velocity, acceleration, deceleration, and position parameters)
 Velocity-contouring (Velocity, acceleration, and deceleration parameters)
 Electronic Gear (Encoder or trajectory position of one axis used to drive a second axis. Master and slave axes and gear ratio parameters)
- On the fly control:
 of profile and filter parameters with pre-load and individual axis or simultaneous multi-axes update
- Electronic gear ratio range:
 -32,768 to +32,767 with a resolution of 1/65,536 (negative and positive direction)
- Filter modes (not for step motor versions):
 Scalable PID + Velocity feedforward + Acceleration feedforward + Bias. Also integration limit, settable derivative sampling time, and output motor command limiting
- Filter parameter resolution (not for step motor versions):
 16 bits
- Position error tracking:
 Motion error window (allows axis to be stopped upon exceeding programmable window)
 Tracking window (allows flag to be set if axis exceeds a

programmable position window)

- Motor output modes:
 DAC: 16 bits ±10V output
 PWM: 10-bit resolution at 20 KHz (1 and 2 axes); 10 KHz for 4 axes
 50/50 supports 2 or 3 phase motors
 Sign magnitude supports 2 phase motors only
 Pulse and Direction Output: 5 MHz, TTL & Differential
- Hall sensor inputs (brushless version only):
 3 Hall effect inputs per axis (TTL level signals)
- Commutation rate (brushless version only):
 10 KHz (4 axes version), 20 KHz (1 and 2 axes version)
- Maximum encoder rate:
 Incremental (up to 5 Mcounts/sec)
 Parallel-word (up to 160 Mcounts/sec)
 optional interpolation module allows increase of encoder resolution up to x1000
- Parallel encoder word size:
 16 bits
- Parallel encoder read rate:
 20 KHz (reads all axes every 50 µsec)
- Servo loop timing range:
 100 µsec nominal (exact time is 102,4 µsec) per enabled axis.
 150 µsec nominal for brushless versions (exact time is 153,6 µsec) per enabled axis.
- Limit switches:
 2 per axis: one for each direction of travel, digitally filtered
- Position-capture triggers:
 2 per axis: index and home signals (high speed position latch)
- Other digital signals (per axis):
 1 AxisIn signal per axis, 1 AxisOut signal per axis
- Software-invertable signals:
 Encoder A, Encoder B, Index, Home, AxisIn, AxisOut, PositiveLimit, NegativeLimit (all individually programmable per axis)
- Analog input:
 8 x 10-bit analog inputs (0 - 4.096 V)
- RAM memory support:
 512 KBytes (128KBytes Double Word Memory Positions)
- Trace modes:
 one-time
 continuous
- Number of trace variables: 27
- max. Number of traceable variables to compare at the same time: 4
- Number of host instructions: 124-168
- Emergency stop:

5V TTL input (either for smooth stop, abrupt stop or motor off) uses the AxisIn signal

- I/Os:
 8 digital inputs / TTL, active low
 4 axis specific inputs
 8 digital outputs / TTL, active low
 4 digital outputs for amplifier enable
 4 axis specific outputs
 8 analog inputs (0 - 4.096 Volts)
 Synchronization IO for multiple cards per system
- Special profile mode combinations:
 Trapezoidal mode with Electronic gearing
 S-curve mode with Electronic gearing
- Master/Slave change:
 Automatic Master/Slave change possible if programmed in user-defined software
- Motor check:
 programmable max. motion error with or without automatic motor shutdown
- Connectors:
 100 position AMP connector
 Brushless Option Adaptor: 68-position cable with adaptor board & connector
- Dimensions:
 half size PCI-Bus card; (175x112 mm)
 options for microstepping and brushless versions occupy additional slot brackets (max. 2)

OPTIONS:

- Cable700** - Matching shielded cable, 100 positions to 100 positions, 1m or 4m long
- IO700/800 Interface** - interface and interconnect board (1 for each set of 4 axes); Mounting: Phoenix EN snap-on rail
- SSI800/900** - for encoders w/ SSI interface
- TunePOSYS Software** - for servo-tuning, maintenance, diagnostics and system performance check with graphical output
- Brushless Adaptor** - adaptor board with additional cable to bring out additional connectors (68-position SCSI); standard for brushless and microstepping versions

Ordering Information:

# of Axes	Brushtype Servo	Brushless Servo	Micro Stepping	Stepper Motor	Multiple Motor (Brushtype/Brushless Servo)
1	POSYS® 901	POSYS® 921	POSYS® 941	POSYS® 951	n/a
2	POSYS® 902	POSYS® 922	POSYS® 942	POSYS® 952	POSYS® 972
4	POSYS® 904	POSYS® 924	POSYS® 944	POSYS® 954	POSYS® 974

servo-Halbeck provides services to companies with unique motion control requirements and significant production quantities to customize their motion controllers. Motion controller customization, including individual development of special interfaces to standard bus systems and modifications to software can help customers successfully meet their specific motion control needs.

NOTE: All specifications have been carefully checked and correspond to the present manufacturing status but, we cannot guarantee that they are totally free of error. We reserve the right to make changes in this specification without prior written notification.