



The 565x Series PC/ISA Motion Controllers

Half-Sized ISA Form Factor Offers Low-Cost Control Solution for DC Brush and DC Brushless Motors.

DC Brush DC Brushless

PMD DSP Control Chip & I/O Chip

PID with Velocity Feedforward Servo Control Loops

16-Bit Analog or 10-Bit PWM Command Signal Output

Dedicated Hardware Position Capture Registers

Independent Electronic Gearing Capabilities

Individual Axis Home, Limits, Drive Fault Input, and Drive Enable Output

32-Bit Position, Velocity, Accel & Jerk Registers

Open Architecture Software Libraries for C, C++ and Visual Basic and Drivers for DOS (16-Bit) and Win95/98/NT (32-Bit DLLs)

ACS-Tech80's 565x Series are the designer's choice for low-cost, host-dependent servo motion control. Their compact, low cost designs, make them ideally suited for PC-based systems and have proven themselves within many OEM applications in the semiconductor, medical and packaging industries.

The heart of the 5650A is its PMD 1401A DSP chipset. The chipset handles the servo algorithms with PID with velocity feedforward servo algorithm for all axes. The dedicated DSP frees the host CPU for other tasks and protects motion control activities from host software problems.

Using the 5651A, systems with high jerk values and steep acceleration curves can adjust phase lag at high speeds. Systems with high jerk values and steep acceleration curves can adjust phase lag at high speeds. This compensates for the physical limitations of DC brushless (AC servo/synchronous) motors, keeps motor temperature to a minimum and maximizes torque. With standard amplifier technology, commutated signals are sent as a series of trapezoidal current profiles, causing torque ripple at certain points in the signal. The board's sinusoidal commutation capability reduces torque ripple occurring within brushless motors using sine wave current control.

The 565x series features dedicated hardware position capture registers. These registers provide a high accuracy of ± 1 count at 1 MHz.

Electronic gearing capabilities allow for tight control between axes without taking up host processing time.

16-Bit and 32-bit libraries with C, C++ and Visual Basic examples are provided. Windows NT drivers are available.

Product Specifications

FULLY PROGRAMMABLE OPERATION:

- PMD DSP Control Chipset
- PID with Velocity Feedforward Servo Control Loops
- S-Curve, Trapezoidal & Velocity Motion Profiles
- 31-Bit Position, Velocity, Accel & Jerk Registers
- 16-Bit DAC or 10-Bit PWM Command Signal Output
- Status LED Lights for Diagnostics
- 14.7kHz External Sinusoidal Commutation, Hall-based or Algorithmic Initialization, Velocity Phase Advance Capabilities & Electronic Gearing (5651A)

CONTROLLER CHIPSETS:

- PMD 1401A 25 MHz DSP (5650A)
- PMD 1231A 25 MHz DSP (5651A)

POSITION & VELOCITY CONTROL:

Modes of Motion: Point-to-Point, Trapezoidal, S-Curve, Contoured Velocity, Electronic Gearing

Update Rates:

5650A: 10kHz, 2.5kHz (4 axes enabled)

5651A: 3.6kHz, 1.8kHz (2 axes enabled)

Commutation Rate: 14.7kHz (5651 only)

Position Range: ± 1.07 Billion Counts

Velocity Range: 0 - 16,384 Counts/Sample Time

Acceleration:

S-Curve: ± 0.5 Counts/Sample-Time²

All Others: $\pm 16,384$ Counts/Sample-Time²

JerK: 0 - 0.5 Counts/Sample Time³ (Resolution: 1/65K) (S-curve only)

Position Accuracy: Within ± 1 count

LIBRARY PROGRAMMING AND OS DRIVER:

- Open Architecture Software Libraries for Standard Complies
- Drivers for DOS: Borland 3.1 and Microsoft 1.52
- Drivers for Win95/98/NT (32-Bit): Visual C++ and Visual Basic

PROGRAMMABLE INTERRUPT SOURCES:

- Time/Position Breakpoint
- Trajectory Complete
- Limits
- Excess Position Error

POSITION FEEDBACK:

1.0 MHz, Differential or Single-Ended

I/O:

Axis Dedicated I/O: TTL Compatible, 4.0 mA Sink on Outputs

Axis Inputs: Positive & Negative Limits, Home Input

General Purpose I/O: 8 Lines TTL Compatible, Bidirectional, 4.0 mA Sink on Outputs, Direct Access from Host CPU

POWER REQUIREMENTS:

+5.0 VDC: $\pm 5\%$ (0.75A), ± 12 VDC: $\pm 5\%$ (10mA)

NOTE: External analog, digital, and encoder power loads are in addition to the maximums shown.

DIMENSIONS:

4.4 x 7.3 x 0.8" (112 x 185 x 20 mm)

Need more information on the 565x Series? Please visit:

<http://www.acs-tech80.com/products/565x/>

How To Order

5650A	4 Axis Position and Velocity
5651A	2 Axis with Sinusoidal Commutation
565XA DEV	Development Kit
565XA NT DEV	Development Kit with NT Drivers
PMD FAMILY NT	Windows NT Drivers
565XB MAN	Hardware & Software Manual Set*
SOFT CD	5XXXX Series Software/Documentation*
CAB5650-36	Cable Interface - 36" *
TB50N-S	Terminal Board* (2 required)
CABDIO-36	Digital I/O Cable Interface - 36" *
TB20N-SD	20-Pin Digital I/O Terminal Board*

* Included in the Development Kit

Warranty

This product is warranted according to the Terms and Conditions of Sale and is effective for one year after shipment from ACS-Tech80. For further warranty information, please consult the hardware manual.

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ACS Tech80

REDEFINING MOTION CONTROL

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