

**SPiiPlus PCI Controller,
Four and Eight Axis Versions**



**An Integrated Package of Motion
Controller, Software Tools
and Expansion Modules**

Supported Motors:

AC Servo/DC Brushless

DC Brush

P/D Stepper

Nanomotion Piezo-ceramic



SPiiPlus Motion Controller

Advanced, High Performance Multi-Axis Motion Controller for Demanding Applications

The SPiiPlus motion controller supports up to eight axes, half of which can be P/D stepper motors. The SPiiPlus is designed to meet the requirements of the most demanding applications including semiconductors manufacturing and inspection, electronic assembly and testing, medical imaging and digital printing equipment. The SPiiPlus handles complex demands without compromising accuracy or throughput.

The SPiiPlus can operate inside a PC or as a stand-alone motion controller. In the PC, the SPiiPlus communicates with the PC host via a bi-directional FIFO and user programmable dual port RAM. The standard configuration includes two RS-232 serial ports (115,000 baud). An Ethernet channel is available as an option. The user can communicate with the controller through all four communication channels simultaneously.

The SPiiPlus supports high-speed incremental encoders, optional SIN-COS encoders with on-board programmable x4 to x65,536 multiplier, 14-bit analog inputs, and non-standard feedback devices that are connected through the High-Speed Synchronous Serial Interface (HSSI).

Complex applications are easily handled with the ACSPL+ motion programming language. ACSPL+ is a powerful, fully compiled, true multi-tasking high-level language that is optimized for motion control applications. It enables you to implement highly complex motion-time-event sequences and programs, with accurate positioning and timing.

The servo algorithms are executed at an uncompromising 20kHz rate, providing very high bandwidth, responsive servo loops with exceptional dynamic tracking, fast settling and excellent smoothness at low velocities.

The SPiiPlus provides advanced features and capabilities, such as a multi-tasking environment, PEG (Position Event Generator), position capture inputs, inverse kinematics, gantry control, dynamic error compensation and built-in SIN-COS encoder interface option. The SPiiPlus can also be programmed to implement customized control algorithms.

The SPiiPlus controller comes with a suite of advanced software tools for program development and support, a unique simulator, and optional expansion modules.

The controller is manufactured under ISO 9001 certified quality management system, meeting stringent safety and EMC standards and is CE marked.

SPiiPlus Highlights:

- Handles demanding applications without compromising accuracy and throughput
- Many motion modes, including point-to-point, jog, segmented motion, master-slave and arbitrary path with PVT cubic interpolation
- ACSPL+ multi-tasking motion application language
- On-the-fly position and velocity changes
- Sub-nanometer resolution using the SIN-COS encoder multiplier (4 to 65,536 counts per encoder line)
- Advanced control algorithm, including notch and low pass filters, executed at 20kHz sampling rate
- Advanced software tools for setup, tuning, and application development
- Fully interactive simulator without any hardware connections
- PCI Bus, two RS-232 serial ports and Ethernet (option) communications types

Motion Technology

The Optimal Technology and Architecture for Motion Control

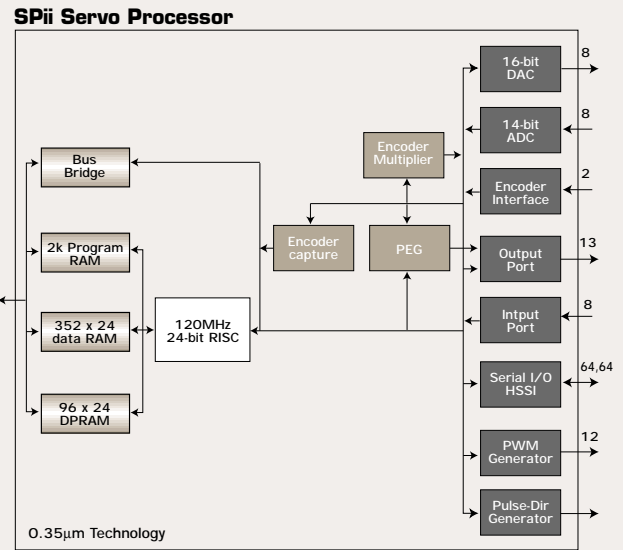
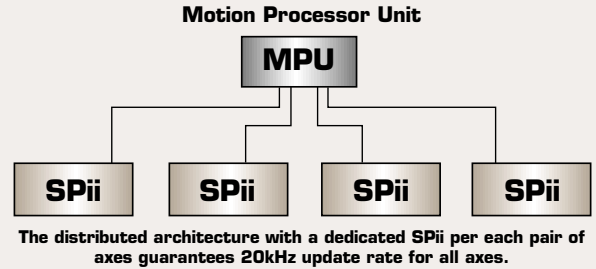
The SPiiPlus products are based on a distributed multiprocessor architecture consisting of a Motion Processor Unit (MPU) and a SPii (ACS-Tech80's second generation Servo Processor) per two axes. The MPU is a Pentium™ like PC104+ type of PC. The MPU multi-tasking real time operating system handles the profile and trajectory generation, ACSPL+ application programs, user command execution, I/O, safety and faults.

The SPii is dedicated to the execution of the real-time control filters. It executes the filter with 48-bit accuracy at an uncompromising 20kHz-sampling rate independent of the complexity of the filters. The SPii has been design by ACS-Tech80 to provide better solutions for the growing needs of current and future machinery and industrial automation.

The SPii is an ASIC that incorporates a 120MHz RISC core that ACS-Tech80 fully designed and optimized for real time motion control algorithms, combined with all the peripherals that are needed to implement a complete high performance, all digital motion control system.

SPii Servo Processor Highlights:

- 120MHz, 24-bit RISC with 48-bit Multiply-Accumulate unit
- Two high speed encoder counters
- x4 - x65,536 encoder multipliers
- 16-bit DAC interface with eight outputs
- 14-bit ADC interface with eight inputs
- Six pairs of 14-bit PWM generators
- Pulse-direction generator
- PEG - position compare outputs
- Position registration inputs
- High-speed serial synchronous interface (HSSI) with 64/64 I/O.



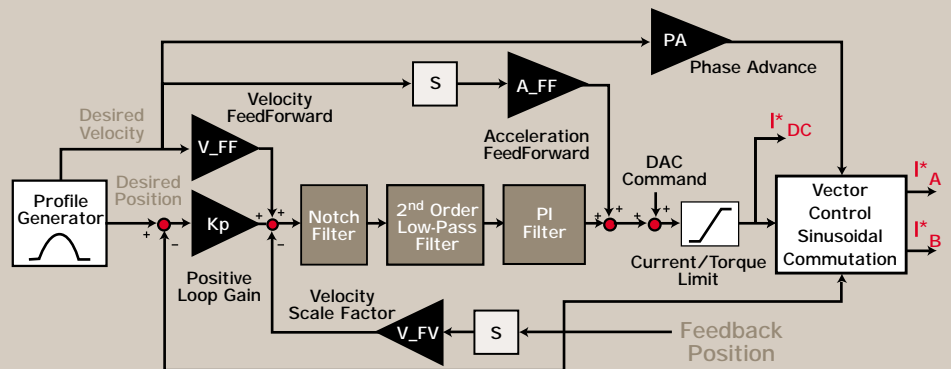
The SPii also provides unique capabilities such as x65,536 SIN-COS encoder multiplier, PEG, position registration and P/D stepper control.

Advanced Servo Control Algorithm

The standard servo control algorithm (filters) consists of a velocity loop and a position loop with automatic velocity feedforward and programmable acceleration feedforward. The velocity loop consists of a Proportional-Integral (PI) filter, second order low-pass filter and a notch filter. The position loop consists of a Proportional gain (P).

The SPii executes the filters at an uncompromising 20kHz rate, with calculation accuracy of 48 bits, providing very high bandwidth, responsive servo loops with exceptional dynamic tracking, fast settling and outstanding smoothness at low velocities. The powerful SPiiPlus MMI software tool provides a menu driven friendly way to setup and tune the system while monitoring and analyzing the axis response with the four channel soft scope. Achieving a robust, stable and optimal response is fast and easy. The MathLab/SimuLink model of the filters is provided, enabling you to build your own system simulation. If your system suffers from a low frequency resonance (belt driven systems or direct drive systems with high inertia are two common examples), notch and low pass filters or a dual loop feedback structure will improve the performance.

If the standard control algorithm is not suitable for the application, it can be modified. The distributed structure of the controller allows for making those modifications without worrying about the other parts of the software.



With the SPiiPlus unique control algorithm achieving a robust, stable and optimal response is fast and easy

A special algorithm that optimizes the performance of Nanomotion piezo-ceramic motors is available.

Advanced Features

Special hardware and software features are provided to answer the needs of complex and demanding applications such as semiconductor manufacturing and inspection systems, electronic assembly, digital printing and similar high accuracy and high throughput equipment.

Software Commutation

The controller can produce a torque/current command to the drive or can commutate the AC servo motor in software - commanding the current in two of the AC servo motor phases. Commutation is done at a 20kHz update rate.

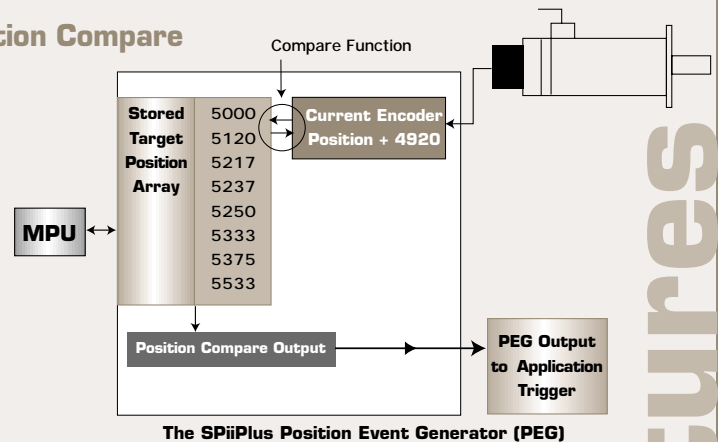
Selection of Feedback Source

For each axis, the position and the velocity feedback sources can be individually selected. They can be one of the encoder inputs, an analog input, or one of the HSSI ports. The HSSI can be used to interface to various external devices, such as absolute encoders, resolvers, laser interferometers with parallel output and more. One can dynamically switch between sources, so that high performance auto-focus system can be easily implemented. The velocity feedback can be derived from the position feedback, or from a separate sensor that is usually mounted on the motor ("dual loop").

SPiiPlus PEG - High Speed Hardware Based Position Compare

SPiiPlus controllers are provided with a hardware-based Position Event Generator (PEG). The main purpose of PEG is to trigger external events via outputs at precise positions with sub-microsecond delays. It can provide accuracy of ± 1 count at up to 5,000,000 encoder quadrature counts/second. Typical applications include vision systems, automated optical inspection (AOI), scanning and laser cutting.

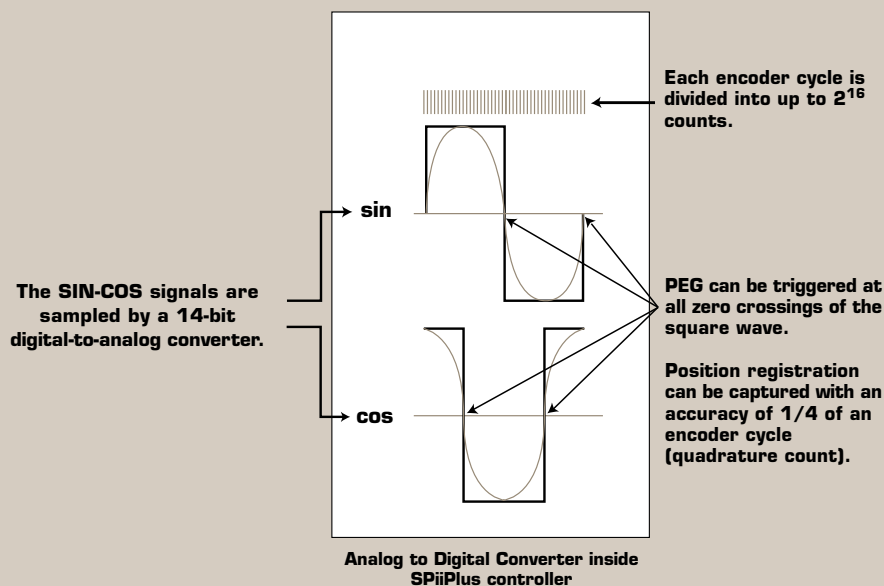
Two modes of operation are supported: Random and Incremental. In Random mode, pulses are generated at positions that are predefined by a position table. In addition, on both the X and Y axes Random PEG controls the state of four digital outputs. This feature provides the capability to activate up to 16 remote operations in association with each PEG event. In Incremental mode, pulses are generated at a programmable interval and start location. Both modes provide the ability to mix encoder based and time based events. This powerful feature enables the use of SIN-COS encoders in applications that previously required expensive laser interferometer feedback.



SPiiPlus Hardware Position Registration (MARK)

SPiiPlus controllers are provided with high speed and high accuracy encoder index and application mark registration capabilities. In many applications, such as packaging, it is desirable to move an axis to a target that is relative to a registration mark. Once an axis is moving and a mark is detected, the motion profile is smoothly modified on-the-fly to reach the new target position. This feature can also be applied with high resolution SIN-COS encoders.

SIN-COS Encoder Multipliers



The SPiiPlus can be optionally provided with up to eight SIN-COS encoder multipliers. Each SIN-COS encoder multiplier accepts an analog 1 V_{ptp} input signal.

The theoretical SIN-COS encoder multiplication factor is x65,536. In field tests, a jitter of ± 1 encoder count was achieved with x8,192 multiplication. Controlling a high performance XY table for wafer inspection, a jitter of 1 nanometer was achieved.

Stepper Control Too

The SPiiPlus PCI supports up to eight axes, half of which can be P/D stepper motors. For example, the eight-axis controller model can control seven servos and one stepper, five servos and three steppers, etc. The controller can generate driver pulses at rates of up to 4,000,000 steps per second, which enables the use of high-resolution micro-step drives without sacrificing speed.

Advanced Features



Expand the I/O capabilities of the controller with HSSI-IO16 modules

High-Speed Synchronous Serial Interface

Expand the Controller Capabilities with the HSSI

The High-Speed Synchronous Serial Interface (HSSI) provides a cost effective way to implement a distributed system and expand the I/O capabilities of the controller. Data is sent and received by the SPii processors at the servo sample and update rate (every 50 microseconds).

The HSSI physical layer is RS-485, using standard Ethernet cables. Customized expansion modules can be developed by the user and operate using the current ACSPL+ and library commands.

The HSSI-IO16 Expansion Module provides an additional 16 opto-isolated inputs and 16 opto-isolated outputs per module. Up to four units of HSSI-IO16 can be daisy chained via each HSSI channel, providing a total of 64 inputs and 63 outputs per HSSI channel.

ACSPL+ Motion Programming Language

Demanding Applications are Easily Handled with the ACSPL+ Motion Programming Language

ACSPL+ is a fully compiled, true multi-tasking high-level language that is optimized for motion control applications. It enables you to implement highly complex motion-time-event sequences and programs, with accurate positioning and timing. There are ten programming buffers, each dedicated to one program. Up to ten programs can run simultaneously. The host PC and controller can continue to communicate while the programs are running. The user has full control of the execution rate of each buffer - from one line that can contain multiple commands per MPU cycle, up to ten lines per MPU cycle. All programs can be stored in the non-volatile memory.

Key Features of ACSPL+:

- Multi-tasking/multi-programming compiled language
- High speed PLC programming
- User defined measurement units
- Parametric programming (axis independent)
- Complex mathematical expressions
- 64-bit floating point arithmetic
- Built-in standard C functions (trigonometric and others)
- Signal processing functions (edge, dead zone, statistical functions, table mapping functions)
- User defined variables, local and global, scalar, one and two-dimensional arrays
- Large memory (>1Mb)
- Auto-routines with user-defined conditions
- Extensive safety and diagnostics handling
- Real-time data collection
- Comprehensive program flow control

ACSPL+ Motion Features:

- Third order profiles (S-curve) with jerk, acceleration, and deceleration control
- On-the-fly position, velocity and acceleration change
- Arbitrary path with PVT cubic interpolation
- Inverse kinematics and axes transformation
- Dynamic error mapping and powerful backlash compensation
- Control two motors, each with its own feedback, as one axis (gantry control)
- Master-slave with position and velocity locking (Electronic gear/cam), on-the-fly phase advance
- Virtual master axis option supported in master-slave operation
- User-defined units enabling faster development and easier program adaptation for different feedback devices

Programming

```

Int J ; Real Pi
Enable XY
J=0 ; Pi=3.14159
Loop 30
  ptp XY,20*cos(2*Pi/30*J),30*sin(2*Pi/30*J)
  Wait 100
  J=J+1
End
Stop
    
```



Complex XY move can easily be implemented with the ACSPL+ programming motion language

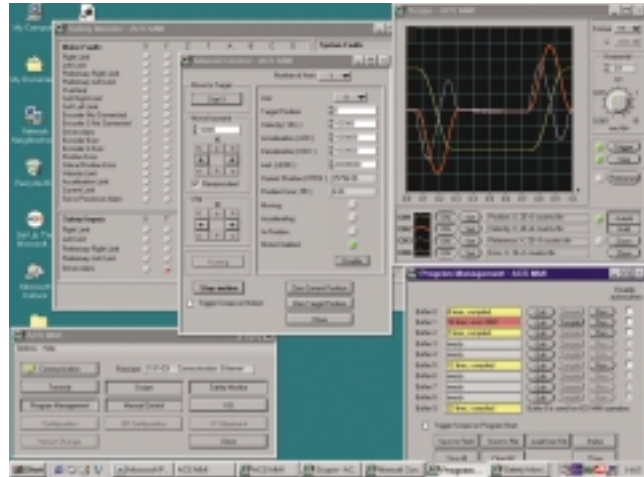
Software Tools

Easy Setup, Fast Application Development and Diagnostics with SPiiPlus Software Tools

The SPiiPlus support tools are designed to answer the needs of your system throughout its life cycle. The suite of tools allows easy setup, simple application development, fast production integration, powerful remote diagnostics and error recovery when your system is installed in the field. A well integrated solution that is designed to reduce your total cost of ownership. The tools minimize time to market while providing you with the flexibility to ensure that your special needs in motion control are answered. SPiiPlus Tools operate on Windows® 95/98/NT/2000/ME and include the SPiiPlus Simulator. The tools are continuously updated to support new available platforms.

SPiiPlus MMI - A Comprehensive Motion-Machine Interface

The Motion Machine Interface (MMI) offers multi-purpose interactive tools for configuration, servo tuning, programming and viewing parameters. It includes an ACSPL+ program manager, a four channel interactive oscilloscope with FFT capability, a communication terminal, an easy to operate motion manager, an I/O monitoring screen and safety monitoring features.



The SPiiPlus MMI provides software tools to run applications and analyze motion

SPiiPlus MultiDebugger - ACSPL+ Applications Development Environment

The SPiiPlus MultiDebugger is a development environment for programming the ACSPL+. It is designed to answer the development needs of sophisticated, complex and multi-tasking applications. Advanced debugging features including progress monitoring, line-by-line execution, break points and multiple variable watch. These features will help you to reduce development time and effort.



The SPiiPlus MultiDebugger provides software to develop and debug the user application

SPiiPlus Library - An Advanced API for Host Programming

A comprehensive set of dynamic link library (DLL) and drivers are available for host programming in C/C++ and Visual Basic. The library supports simultaneous communications and multi-threaded applications (up to ten communication channels and interrupts with callback functions). Communication can be between one application and several controllers or between several applications and one controller. The communication link can be via PCI bus, two RS-232 channels, and/or Ethernet. ACS-Tech80 is continuously adding support for additional operating systems. Currently the libraries support the Windows® and On Time™ operating systems. Contact ACS-Tech80 regarding other operating systems.

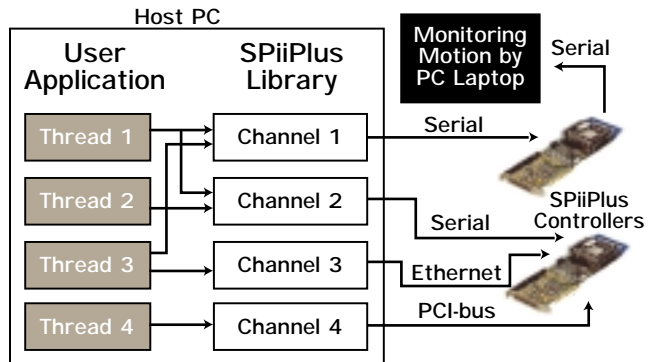
SPiiPlus Utilities

Utilities for upgrading firmware, recovering from errors, and managing applications.

SPiiPlus Simulator - Significantly Shortening Your System Time to Market

All SPiiPlus software tools can be provided with a unique built-in simulator of the controller which allows applications to be developed and logically debugged without attaching any hardware. Develop a virtual simulation of your whole system on your host and use ACSPL+ programs to emulate changes of inputs, outputs, safety faults, errors and more. Each controller is provided with a CD that includes the suite of software tools, including a limited version of the simulator.

A limited version of the SPiiPlus Simulator can be downloaded from www.acs-tech80.com.



The SPiiPlus Library is multi-threaded and supports simultaneous communications

Specifications

* Refers to four-axis version

Axes

Quantity: Four or eight.

Note: Specifications applying to four-axis model are indicated with an asterisk (*).

Types: All axes can be:

- Three phase AC servo/DC brushless motors
 - DC brush motors
 - Nanomotion piezo-ceramic motors
- Up to half of the axes can be:
- P/D stepper motors

Position Control

Sampling Rate: 20kHz.

Control Algorithms: P type, automatic velocity feed-forward, acceleration feed-forward, integrator anti-reset windup.

Trajectory Calculation Rate: Programmable 0.5, 1, 2kHz.

Position Range: $\pm 4 \times 10^{15}$ counts.

Accuracy: ± 1 encoder count.

Velocity Control

Sampling Rate: 20kHz.

Control Algorithm: PI type, second order low pass and notch filters.

Velocity Programming Range: Up to 160×10^9 counts/second (enables SIN-COS encoders with high multiplication).

Resolution: Practically unlimited.

Velocity Accuracy:

Long term: 0.005%.

Short term: 0.01% - 0.5% (system-dependent).

Acceleration Programming Range: Up to 4×10^{15} counts/second².

Position and Velocity Feedback

Feedback types: Any combination of incremental digital encoders, SIN-COS encoders (optional), analog inputs, user defined devices via HSSI channels.

Note: Encoders require external supply.

Incremental Digital Encoder:

Quantity: Up to four*/eight, one per axis.

Type: Three-channel, differential, RS-485.

A&B, I; UP-DN, I; CLK-DIR, I.

A&B type requirements:

- A, B line cycle > 200 nsec.
 - A, B low & high states > 100 nsec.
 - A to B edge separation > 25 nsec.
- UP-DN, CLK-DIR types requirements:**
- Pulse width > 100 nsec.

Maximum rate: 20 million encoder counts/second.

SIN-COS Analog Encoder (optional):

Quantity: Up to four*/eight, one per axis.

Type: Three-channel, differential, incremental, quadrature, 1Vptp.

Programmable multiplication factor: $x4 - x65,536$.

Maximum rate: Up to 250,000 sine periods/second.

Higher rate is possible upon request.

Maximum acceleration with SIN-COS encoder: 10^8 sine periods/second².

Drive Interface

Torque Command:

Quantity: One per axis.

Type: Differential, $\pm 10V$, 16-bit DAC resolution.

Commutation Commands (for AC Servo/DC Brushless Three-Phase Servo Motors):

Quantity: Two per axis.

Type: Differential, $\pm 10V$, 16-bit DAC resolution.

Rate of software commutation: 20kHz.

Note: Offset compensation (servo motors) is provided by software with 0.3mV resolution.

Pulse-Direction Commands (for Stepper Motors):

Quantity: One per axis.

Type: Differential, RS-485.

Maximum rate: four million pulses per second.

Drive Enable Output:

Quantity: One per axis.

Type: Open collector/open emitter.

Collector emitter voltage range:

5Vdc to 30Vdc.

Output current: 50mA.

Propagation delay: <1ms.

Drive Fault Input:

Quantity: One per axis.

Type: Source/sink.

Input voltage: 5Vdc ($\pm 10\%$) or 24Vdc ($\pm 20\%$), automatic detection.

(requires external supply).

Propagation delay: <1ms.

I/O

Safety Inputs:

One dedicated E-stop. Left limit and right limit per axis.

Type: Source/sink, opto-isolated.

Input safety voltage range: 5Vdc ($\pm 10\%$) or 24Vdc ($\pm 20\%$), automatic detection

(requires external supply).

Propagation delay: <1ms.

General Purpose and Registration Mark (Position Capture) Digital Inputs:

Digital inputs can be used as general purpose or as registration mark inputs.

Quantity: Eight. Two Marks per X, Y, Z, and T axis.

Type: Differential, RS-485.

Propagation delay: <0.1 μ s.

General Purpose and Position Event Generator (PEG) Digital Outputs:

Digital outputs can be used as general-purpose or as PEG outputs.

Quantity: 12. One PEG pulse per X,Y,Z and T axis, four PEG states per X and Y axis.

Type: Differential, RS-485.

Propagation delay: <0.1 μ s.

PEG position compare accuracy:

± 1 count up to 5,000,000 counts/second.

PEG generated pulse width range: 25nsec to 1.6msec.

Edge separation between two PEG events: Minimum 200nsec.

Number of PEG pulses in random (table based) mode: Up to 10,000.

Number of PEG events in Incremental Mode: Unlimited.

I/O - cont.

Analog Inputs:

Analog inputs also serve as SIN-COS encoder inputs. Each SIN-COS encoder consumes two analog inputs.

Quantity: Eight*/sixteen.

Type: Differential, $\pm 1.25V$, 14-bit resolution.

Analog Outputs:

Analog outputs also serve as drive command outputs. Each servo axis consumes one (torque command) or two (commutation command) analog outputs

Quantity: Eight*/sixteen.

Type: Differential, $\pm 10V$, 16-bit resolution.

Expanded Digital I/O:

Quantity: Up to 128*/256 inputs and 126*/252 outputs.

Type: Opto-isolated, 5-24Vdc, via HSSI - by HSSI-IO16 modules.

HSSI Expansion Bus:

Quantity: Two*/four HSSI channels per controller.

Type: Differential, RS-485.

Each channel provides 64 input bits and 64 output bits, sampled and updated at a 20kHz rate.

Communication Channels

PCI Bus: 33MHz, 32-bit.

Bi-directional FIFO: 512x8 in each direction.

Dual port RAM (DPR): 512x16.

Comprehensive interrupt support.

RS-232: 2 ports. Up to 115,000 Baud.

Ethernet port (optional): TCP/IP 10/100 Mbits/sec.

Simultaneous communications through all channels is fully supported.

Controller

Multi-Processor Architecture:

Motion Processor Unit (MPU): PC104+.

Real-time controllers: 120MHz SPii Servo Processors, one per two axes.

Memory:

RAM: 8Mb.

Non-volatile memory: 4Mb.

User memory: 1Mb.

Power Supply:

Voltage/current: +5Vdc/3.5A, $\pm 12Vdc/0.25A$.

Voltage range: 5V (-2%/+5%), $\pm 12V (\pm 5\%)$

Note: When used outside the PC, the 5V and $\pm 12V$ must be supplied through a dedicated power connector.

Environmental

Operating Temperature:

0°C to 70°C.

Storage Temperature:

-40°C to 85°C.

Humidity: 90% RH, non-condensing.

Dimensions

PCI standard long card: 28.5mm (1.12") x 98.5mm (3.87") x 342mm (13.4") [H x W x D]

The card occupies 1.5 PCI slots. A short PCI card can be used adjacent to it.

How To Order

SPiiPlus Controller and Software

• SPiiPlus Controller

Example

4 - Four axis controller
8 - Eight axis controller

SPiiPlus PCI - 4 - R - 2

R - Two RS-232 communication ports only
E - Two RS-232 communication ports plus Ethernet connection

Number of SIN-COS encoder multipliers. 0 – 8

• SPiiPlus Basic Tools Package

The SPiiPlus Basic Tools CD comes with every controller. The CD includes:

- SPiiPlus MMI
- SPiiPlus MultiDebugger
- SPiiPlus Library
- SPiiPlus Utilities
- SPiiPlus Simulator – **limited version for training and demonstration purposes**
- Hardware, software and programming guides in PDF format
- ACSPL+ and C/C++/Visual Basic® training files and programming examples



Additional Products

• SPiiPlus ADK Tools Package

The SPiiPlus ADK (Advanced Development Kit) is intended for programmers who develop ACSPL+ based applications and host based programs. The CD includes:

- SPiiPlus Basic Tools Package
- SPiiPlus Simulator – **full version with one user license for one PC**



• SPiiPlus PCI-INT

Interface kit for easy connection of controller to system using standard D-type connectors and provided cables. Note: For stand-alone controller operation, 5Vdc (3.5A), ±12Vdc (0.25A) supply is required.

Kit includes:

- One SPiiPlus/SPiiPCI breakout box.
Dimensions: 35mm (1.37") x 425mm (16.73") x 145mm (5.70") [H x W x D]
- One flat cable (95cm/37.4") - 200-pin header to four 50 pins headers
- One flat cable (95cm/37.4") - 50-pin headers
- One flat cable (95cm/37.4") - 30-pin headers
- One power male connector and cable (150cm/59") – for stand-alone operation
- One RS-232 communication cable (150cm/59")

• SPiiPlus PCI-BRACKET

Mounting bracket for stand-alone controller operation.

Dimensions: 175mm (6.88") x 345mm (13.58") x 40mm (1.57") [H x W x D]

• HSSI-IO16

I/O expansion module providing 16 additional opto-isolated digital inputs and 16 opto-isolated digital outputs per module.

For more information, refer to the HSSI-IO16 data sheet.

For prototyping the following products are recommended:

- SPiiPlus controller
- SPiiPlus PCI-INT
- SPiiPlus PCI-BRACKET (for stand-alone operation)



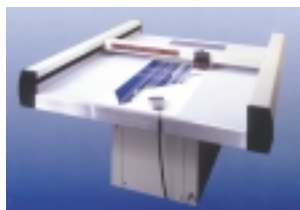
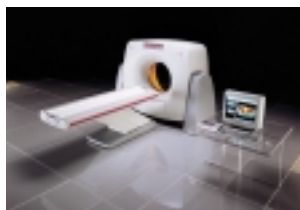
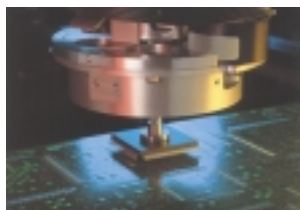
SPiiPlus Breakout Box is used for easy integration and cables connection

Warranty

The warranty of this product is according to the Terms and Conditions of Sale and is effective for one year after shipment from ACS-Tech80. For further warranty information, consult the SPiiPlus Hardware and Setup Guide.

Ordering

Applications



Semiconductor

- Sub-nanometer resolutions using the built-in SIN-COS encoder multiplier for high accuracy and very low jitter.
- 100 nano-second hardware position compare (PEG) for vision triggering.
- 20kHz servo update rate with sophisticated PIV filter for accurate position, highly stable low velocity and quick settling times.
- Software commutation for optimal ripple free operation.
- Maximize machine performance in both front and back-end equipment.
- Dynamic auto-focus control for wafer inspection with high magnification.
- Dynamic error mapping and correction by powerful CONNECT function.
- Powerful gantry control (using two motors each with its own feedback as one axis).

Electronic Assembly & Testing

- Combining very high velocities of meters per second with sub-micron resolution using SIN-COS multiplier for optimal accuracy and throughput.
- Third order profiles that significantly reduces settling time.
- Distributed control architecture with a dedicated SPii processor for each pair of axes guarantees motion performances.
- Changing motion profiles on-the-fly based on vision sensor input.
- Event triggering based on profile remaining time (pre-ignition).
- Force/torque control using high resolution analog inputs that are sampled at 20kHz.
- Dynamic switching between position and force control modes.
- Powerful inverse kinematics using the CONNECT function.

Medical Instrumentation

- Comprehensive diagnostics and safety handling.
- Fail-safe operation.
- High-speed hardware based position compare for X-ray activation and synchronization with patient's move.
- Cost effective distributed axis and I/O control using the HSSI.

General Automation

- Flexible application programming using the ACSPL+ multi-tasking language with floating point and user units support.
- Short time to market - fast implementation of complex applications using powerful support tools with the unique controller simulator.
- Advanced tuning tools including FFT analysis, profile and variables monitoring for optimal and fast system setup.
- Dual loop control for responsive leadscrew and belt driven based systems.
- Open architecture design offers a variety of communication options including PCI-bus, serial and Ethernet communications.
- Remote monitoring using the Ethernet link.
- A 20kHz servo update rate and a 2kHz profile update rate for tight position control and synchronization with external processes.
- Up to eight axis arbitrary path generation with cubic interpolation (PVT).

Advanced Digital Printing and Laser Cutting

- Precise laser power control using an analog output proportional to actual vector velocity.
- Accurate ink-jet printing control using PEG.
- Two-dimensional dynamic error compensation tables.
- Exact color matching in flexographic and offset printing machines.

Packaging Machines

- Hardware based position registration for fast and accurate operation.
- On-the-fly homing and registration correction.
- Implementation of any combination of master-slave configurations with virtual axes.
- Multiple masters and slaves on one controller.

ACS-Tech80, PEG, SPii, and SPiiPlus are trademarks of ACS-Tech80. Windows is a registered trademark of the Microsoft Corp. Copyright © July 2002 ACS-Tech80. All rights reserved. Version 2.3.

ACS-Tech80 Ltd.

Ramat Gabriel Industrial Park, POB 5668,
Migdal Ha'Emek 10500, ISRAEL
Phone: +972-4-6546440 Fax: +972-4-6546443

ACS-Tech80 Inc.

7351 Kirkwood Lane North, Suite 130
Maple Grove, MN 55369, USA
Phone: +763-493-4080 Fax: +763-493-4089

ACS-Tech80 Europe B.V.

Antonie van Leeuwenhoekstraat 18
3261 LT Oud-Beijerland, The Netherlands
Phone: +31-186-624994 Fax: +31-186-624462

For the most updated information please refer to www.acs-tech80.com

Applications