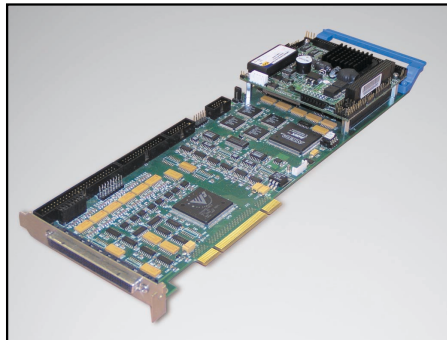


SPiiPlus Econo Series

Economical Motion Controllers



SPiiPlus PCI-ST

Economical 2, 4 Axes Step Motor Motion Controller

The SPiiPlus PCI-ST is especially designed for enhancing the performance of OEM systems operating with step motors, and servo motor drives with Pulse-Direction interface. The SPiiPlus PCI-ST is user programmable, easy to use and cost effective. It supports up to four axes, open and closed loop control and high resolution micro-stepping. The SPiiPlus PCI-ST high performance motion control is obtained by full axes synchronization, up to 4 million steps per second, real-time registration inputs and position compare outputs and ACSPL+ multi-tasking application language. A powerful suite of software tools provides high speed host communication via multiple channels and a quick application development, system setup and analysis.

Specifications

Axes

See table below.

Profile Generation

Trajectory Calculation Rate: 1kHz.
Position Range: $\pm 4 \times 10^{15}$ counts.
Velocity: up to 4 million pulse/second.
Acceleration: up to 4×10^{15} counts/sec².

Feedback

One incremental digital encoder per axis, A&B,I; UP/DN,I; CLK/DIR,I.
Type: RS-422. Maximum rate: 30 million encoder counts/sec.
Note: encoders require external supply.

Drive Interface

Pulse-Direction Commands:
Two commands per axis.
Type: RS-422. Up to 4 million pulse/sec.

Drive Enable Output:
One per axis. Type: two-terminal, source or sink. Collector emitter voltage: 5Vdc to 30Vdc. Output current: 50mA.

Drive Fault Input:
One per axis. Type: two-terminal, source or sink. Input voltage: 5Vdc ($\pm 10\%$), or 24Vdc ($\pm 20\%$), requires an external supply.

Digital I/O

Safety Inputs:

One E-stop. Left and Right limit per axis.
Type: two-terminal, source or sink, opto-isolated. Input safety voltage: 5Vdc ($\pm 10\%$) or 24Vdc ($\pm 20\%$), requires an external supply.

Digital Inputs:

See table below. Can be used as general purpose or as registration mark (position capture) inputs.
Type: RS-422. Propagation delay: $< 0.1 \mu\text{sec}$.

Note: when working in open loop, the registration mark is based on the internal pulse counter. When working in closed loop, the registration mark is based on the encoder counter.

Digital Outputs:

See table below. Can be used as general purpose, or as Position Event Generator (PEG) outputs, or as mechanical brake outputs.
Type: RS-422. Propagation delay: $< 0.1 \mu\text{sec}$. PEG pulse width: 25nsec to 1.6msec. PEG position accuracy: ± 1 count at up to 5,000,000 counts/sec.
Number of PEG pulses in random (table based) mode: up to 30,000.
Number of PEG events in incremental mode: unlimited.

Note: when working in open loop, the PEG is based on the internal pulse counter. When working in closed loop, the PEG is based on the encoder counter.

HSSI Expansion Bus

One channel, providing 64 input bits and 64 output bits, sampled and updated at a 20kHz rate. Type: RS-422. Up to additional 64/63 I/Os via a single HSSI channel.

Communication Channels

PCI Bus: 33MHz, 32-bit. Bi-directional FIFO : 512x8 in each direction.
RS-232/422: two ports (one can be also RS-422). Up to 115,200bps.
Ethernet: TCP/IP, 10/100 Mb/s/sec. Simultaneous communication through all channels is fully supported. Modbus protocol as master or slave is supported via Ethernet or Serial channels.

Controller

User Memory:
RAM: 13Mb. Flash: 13Mb.
Powerup Time: 25sec.
Power Supply Voltage/Current:
+5Vdc (-2%/+5%) /3.5A, $\pm 12\text{Vdc}$ ($\pm 5\%$) /0.25A.
Note: when used outside the PC, the 5V and $\pm 12\text{V}$ must be supplied through a dedicated power connector.

Environment

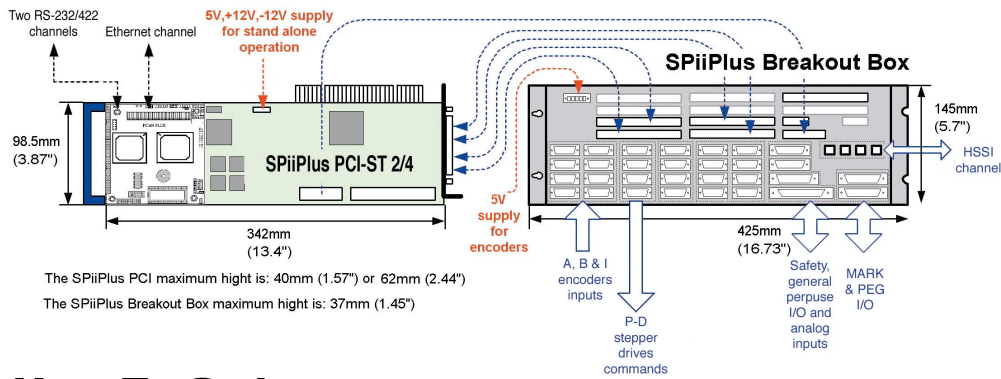
Operating Temperature:
0°C to 60°C.
Storage Temperature: - 40°C to 85°C.
Humidity: 90%RH, non-condensing.

Axes and I/O Functionality

Product	Axes with P-D Drive Commands	Digital I/O	I/O	
			Axes with PEG Pulse Output	Position Registration MARK Inputs
SPiiPlus PCI-ST-2	2 (XY)	8/10	2 (XY)	2 per axes (X,Y)
SPiiPlus PCI-ST-4	4 (XYZT)	8/12	4 (XYZT)	2 per axes (X,Y,Z,T)



Layout & Dimensions



How To Order

SPiiPlus PCI-ST Controller and Software

• SPiiPlus PCI-ST Controller

Example: **SPiiPlus PCI-ST - 4**

2 - Two axes controller 4 - Four axes controller

Each SPiiPlus PCI-ST controller is provided with:

- One communication cable (37cm/14.1") provides an RS-232 and an RS-232/422 channels via two D-sub, male, 9-pin connectors.
- One CD with SPiiPlus ADK (Advanced Development Kit) for programmers who develop ACSPL+ based applications and host based programs. The SPiiPlus ADK is free to download from our website | Download & Support | SPiiPlus Downloads | Software Installation section. The SPiiPlus ADK includes:
 - **SPiiPlus MMI** - for axis configuration, programming and for viewing parameters
 - **SPiiPlus Library** - for host programming in C/C++ or Visual Basic
 - **SPiiPlus Utilities** - for upgrading firmware and for error recovering
 - **SPiiPlus Simulator** - for fast application development and debugging
 - Hardware & setup, software and programming guides in PDF format
 - ACSPL+ ,C / C++ and COM training files and programming examples



Additional Products

- **FC-52050-420**: Flat cable (20cm/7.8") - 200 pins header to four 50 pins headers
- **FC-52050-440**: Flat cable (40cm/15.7") - 200 pins header to four 50 pins headers
- **FC-52050-493**: Flat cable (95cm/37.4") - 200 pins header to four 50 pins headers
- **FC-52050-4150**: Flat cable (141cm/55.5") - 200 pins header to four 50 pins headers
- **CB-RS422-040**: RS-422 communication flat cable (36cm/14.1") - D type connector, 9 pins, male

• SPiiPlus PCI-INT Kit

Interface kit for easy connection of controller to system using standard D-type connectors and provided cables.

Kit includes:

- One SPiiPlus 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 standalone operation

• 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]



SPiiPlus Breakout Box for easy integration and cables connection

For prototyping, the following products are recommended:

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

Warranty

The warranty of this product is according to the Terms and Conditions of Sale and is effective for one year from date of shipment from ACS Motion Control. Copyright© August 2006 ACS Motion Control. All rights reserved. Version 1.4.

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