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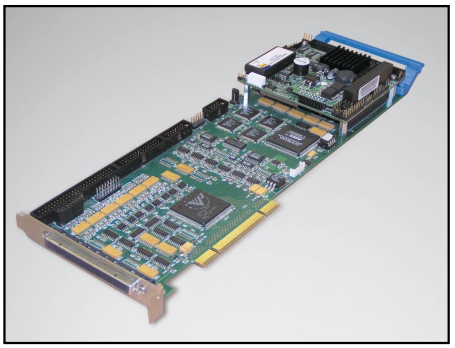
SPiiPlus Econo Series
Economical Motion Controllers

ACS MotionControl
Your Competitive Advantage



SPiiPlus PCI-LT

Economical 2, 4, 6, 8 Axes Motion Controller

The SPiiPlus PCI-LT is especially designed for enhancing the performance of OEM machinery that requires multi-axis synchronization and low price. With its versatility, the SPiiPlus PCI-LT controls systems with both servo and step motors. It provides smooth motion, high resolution and high speed without compromising accuracy and throughput.

The SPiiPlus PCI-LT precise motion control is obtained by 20 kHz sampling rate, 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 160×10^{9} counts/second.

Acceleration: no practical limitation.

Control

Position (P) loop + velocity loop (PI, 2'nd order low-pass and Notch filters).

Sampling Rate: 20 kHz.

Accuracy: ±1 count.

Dual Loop: see table below.

Note: each Dual Loop consumes another axis, which should be defined as a dummy.

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/second.

Note: encoders require external supply.

Drive Interface

Analog command: One torque command. Type: ±10V differential, 16-bit DAC res. Offset compensation: programmable, 0.3mV res.

Pulse-Direction Commands:
Two commands per half of the axes.
Type: RS-422. Up to 4 million pulse/sec.

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

Drive Fault Input: One per axis.
Type: two-terminal, opto-isolated, source or sink.
Input voltage: 5Vdc (±10%), or 24Vdc (±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.
Voltage: 5Vdc (±10%) or 24Vdc (±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: <0.1µsec.

Digital Outputs: See table below.
Can be used as general purpose, or as Position Event Generator (PEG) outputs, or as mechanical brake control.
Type: RS-422.
Propagation delay: <0.1 µsec.
PEG pulse width: 25nsec to 1.6msec.
PEG position accuracy: ±1 count at up to 5,000,000. counts/sec.
PEG random events: up to 30,000.

HSSI Expansion Channels:
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.

Analog I/O

Analog Inputs: Four, for general purpose.
Type: ±0.5V, differential, 14-bit resolution.

Analog Outputs: Two, for general purpose.

Note: in addition, one dedicated analog output drive command is provided per axis (can not be used for general purpose).

Type: ±10V, differential, 16-bit resolution.

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 Mbits/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, ±12Vdc (±5%) /0.25A.

Note: when used outside the PC, the 5V and ±12V must be supplied through a dedicated power connector.

Environment

Operating Temperature: 0°C to 60°C.

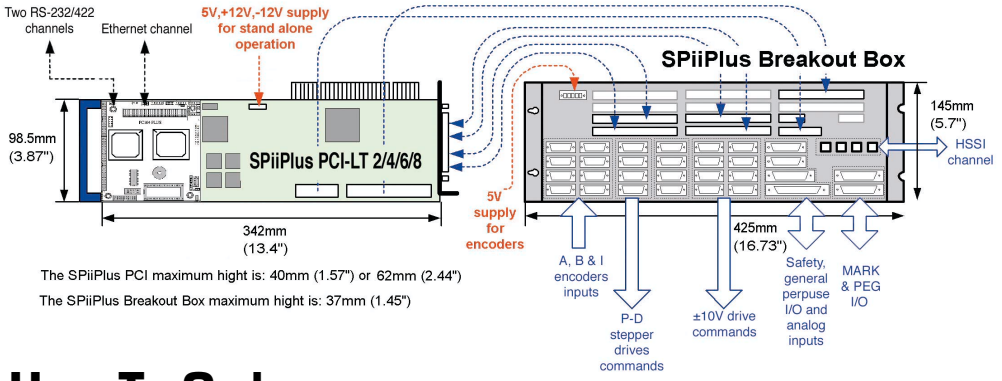
Storage Temperature: - 40°C to 85°C.

Humidity: 90%RH, non-condensing.

Axes and I/O Functionality

	Axes and Supported Features			I/O			
Product	**Axes with ±10V Drive Command**	**Axes with P-D Drive Commands**	**Axes Supporting Dual Loop**	**Digital I/O**	**Axes with PEG Pulse Output**	**Position Registration MARK Inputs**	**Analog I/O**
SPiiPlus PCI-LT-2	2 (XA)	1 (X)	1 (X)	6/5	1 (X)	2 per axis (X)	4/2
SPiiPlus PCI-LT-4	4 (XAYB)	2 (XY)	2 (XY)	8/10	2 (XY)	2 per axes (X,Y)	4/2
SPiiPlus PCI-LT-6	6 (XAYBZC)	3 (XYZ)	3 (XYZ)	8/11	3 (XYZ)	2 per axes (X,Y,Z)	4/2
SPiiPlus PCI-LT-8	8 (XAYBZCTD)	4 (XYZT)	4 (XYZT)	8/12	4 (XYZT)	2 per axes (X,Y,Z,T)	4/2

Layout & Dimensions



Supported Motors:	
±10V Command	AC Servo/DC Brushless (commutation by drive)
	DC Brush
	Nanomotion Piezo-ceramic
P-D Commands	Step motor
	Servo motor

How To Order

SPiiPlus PCI-LT Controller and Software

- *SPiiPlus PCI-LT Controller*

Example: SPiiPlus PCI-LT - 4

2 - Two axes controller 6 - Six axes controller
4 - Four axes controller 8 - Eight axes controller

Each SPiiPlus PCI-LT 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
  - ***SPiiPlus FRF*** - for analyzing motion frequency response
  - 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-LT 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. Version 1.5.

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For the most updated information please refer to www.acsMotionControl.com