SPiiPlus-LF

Cost Effective
4 Axis Motion Controller

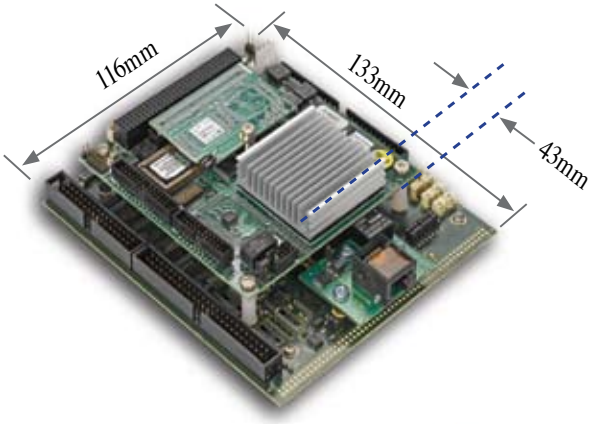
- **Low cost and small footprint SPiiPlus 4-axes motion controller**
- **PLCopen compliant. Can be programmed in any of the five IEC61131-3 standard PLC languages**
- **Outstanding servo performance with sampling rate of 20kHz on all axes**
- **Supported by ACS' advanced SPiiPlus software tools**

The SPiiPlus-LF 4-axis controller is designed to address the needs of cost sensitive applications where space is at a premium. The SPiiPlus-LF is more than just a motion controller; with its PLC programming and CANOpen master capabilities it can actually control your whole machine.
The SPiiPlus-LF is PLCopen compliant, in addition to ACSPL+ motion programming language, it can be programmed in any of the five IEC61131-3 standard PLC languages. Its capabilities can be extended by adding up to 64 CANopen nodes of additional axes and I/Os.

As a member of the SPiiPlus family of products, it is supported by the SPiiPlus ADK free software support package, which includes a rich set of powerful tools with full simulation capabilities for easy setup, tuning, application program development, debugging and diagnostics.
To simplify the process of prototyping the following accessories are offered: mating connectors' kit, breakout terminal kit for easy prototype connectivity, and a din rail mounting kit.

Layout & Dimensions

Weight: 250 gram
Width x Length x Height
W x L x H - 133 x 116 x 43 mm



CE RoHS

ACS MotionControl
Your Competitive Advantage

Axes

Four.

Profile Generation

Trajectory Calculation Rate: 1 kHz

Control

Position (P) loop + velocity loop (PI, 2'nd order low-pass and Notch filters).
Sampling Rate: 20 kHz.
Dual Loop: up to 2 axes. Note: each dual loop consumes another axis.

Feedback

Feedback type: incremental digital encoders and absolute encoders.

Incremental digital encoders:

One per axis, A&B,I; UP/DN,I; CLK/DIR,I.
Type: RS-422.
Max. rate: 30 million encoder counts/sec.
Secondary encoder feedback: supports interface to a secondary incremental digital encoder using the HSSI-ED2

Absolute encoders:

Optional High Speed Synchronous Interface (HSSI-HES) to EnDat (Heidenhain) and Smart-Abs (Tamagawa) absolute encoders.

Drive Interface

P/D Commands:

Quantity: two pairs of P/D signals.
Type: Single-ended TTL.

Analog commands:

Quantity: two per axis.
Type: 12 bit resolution, ±10V differential or single ended.
Offset compensation: programmable, 6.6mV resolution. On board potentiometers for fine tuning.

Drive Enable Output:

Type: single ended, sink only. Up to 24V/7mA, active low.

Drive Fault Input:

Type: single-ended, sink only, Up to 30V.
Input circuit current: <1mA.

Digital I/O

Digital Inputs

Emergency Stop Input:
Type: two-terminal, opto-isolated.
Left and Right Safety Limit Inputs:
Quantity: pair per axis.
Type: single-ended, sink (default) or source, configurable by jumper, opto-isolated.
Safety inputs voltage: single-ended, 5V or 24V.
Input circuit current: <15mA.
General Purpose Inputs:
Quantity: eight.
Type: single-ended, opto 22 compatible, TTL, 5V.
Input circuit current: <1mA.
Mark (position capture) Inputs:
Quantity: Four. Two inputs per each primary axis (X, Y).
Type: RS-422. Propagation delay: <0.1 µsec.

Digital Outputs

General Purpose Outputs:
Quantity: eight.
Type: single-ended, TTL, opto 22 compatible.
Mechanical Brake Outputs:
Supported through unused digital outputs. User can choose to use them either as a digital output or as a mechanical brake outputs. By default, configured to digital outputs.
PEG (position event generator) Pulse Outputs:
Quantity: Two. One output per each primary axis (X, Y).
Type: RS-422.
Propagation delay: <0.1µsec.
PEG pulse width: 25nsec to 1.6msec.
PEG position accuracy: ±1 count at up to 5,000,000 counts/sec.
I/O Expansion via HSSI Channels:
Quantity: one. Each channel provides 64 input bits and 64 output bits per channel, sampled and updated every 50µS.
Type: RS-422. Up to additional 64 I/Os via each HSSI using HSSI-IO16 modules.

Analog I/O

Analog Inputs: N/A

Analog Outputs:

Quantity: two
Type: 12 bit resolution. Configurable by jumper to be differential ±10V or single ended ±10V.
Note: can be configured to be General Purpose Analog command.

Communication Channels

Two RS232 channels.
Ethernet interface: One. TCP/IP, 10/100 Mbits/sec. Simultaneous communication through all channels is fully supported. Modbus protocol as master or slave is supported via all channels.

MPU

User Memory: RAM: 128Mb (DDR 200MHz). Flash memory: 128Mb for user backup & firmware. Powerup Time: 25sec.

Power Supplies

+5Vdc (±2%)/3A
±12Vdc (±5%)/0.6A
Safety supply voltage/current: 5Vdc (±10%)/0.35A or 24Vdc (±20%)/0.35A

Environment

Operating Temperature: 0°C to 40°C.
Storage Temperature: - 40°C to 70°C.
Humidity: 90%RH, non-condensing.
The controller is RoHS compliant.

How To Order

SPiiPlus LF Controller and Software

- **SPiiPlus LF Controller** **Example: SPiiPlus-LF - 4 - C - D**

Number of axes: [4] - Four axes controller
Optional field – PLC & CANOpen network [C] – PLC & CANOpen
Optional field – Din Rail mounting [D] – Din Rail included

Each controller is provided with SPiiPlus ADK (Advanced Development Kit) CD 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, servo tuning, programming and viewing parameters
- **SPiiPlus C and COM Libraries -** for host programming in C/C++ or Visual Basic™
- **SPiiPlus Utilities -** for upgrading firmware and recovering from errors
- **SPiiPlus Simulator -** for fast application development and debugging
- **SPiiPlus FRF -** for analyzing motion frequency response
- **PLCopen -** programming in any of the five IEC61131-3 standard PLC languages
- Hardware & setup, software and programming guides in PDF format
- ACSPL+, C/C++ and COM training files and programming examples

Additional Accessories

- **SPiiPlus-LF-ACC:** Mating connectors kit that includes cables to the controller.
- **SPiiPlus-LF-BOB:** Breakout box kit (for easy prototype)

Supported Motors:

±10V Commands	AC Servo/DC Brushless
	DC Brush
	Nanomotion Piezo-ceramic
P-D Commands	Step motor
	Servo motor

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. For further warranty information, please see the hardware guide.

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