ACS *MotionControl*
Your Competitive Advantage

HSSI-ED2
Two-Axis Distributed Interface Module
For SPiiPlus Motion Controllers and Control Modules

SPiiPlus motion control products include High-Speed Synchronous Serial Interface (HSSI) channels. These channels can be used to control distributed axes, support additional digital or analog I/O, or communicate with non-standard devices such as laser interferometers or absolute encoders.

The HSSI channel communicates via common Ethernet-type cable (up to 20 meters) with an external HSSI module that implements the required functionality. The number of HSSI channels is equal to half the number of axes supported by the control product.

The HSSI-ED2 module provides a convenient and cost-effective way to interface the SPiiPlus controller with two distributed axes. The module includes two motor drive interfaces with +/-10V torque command, two 3-channel quadrature (A&B, I) encoder inputs, four limit switch inputs, and eight/eight general-purpose digital I/O.

For example, two of the four axes controlled by a SPiiPlus PCI-4 controller can be connected to one of the controller's HSSI channels via a remote HSSI-ED2 module. The remaining two axes can be connected directly to the controller or via another remote HSSI-ED2 module to the controller's remaining HSSI channel.

The performance of the distributed axes is comparable to that of the axes that are connected directly to the controller. The controller samples the remote encoders and updates the drive commands at a rate of 20kHz, providing high-bandwidth servo control, exceptional dynamic tracking, and fast settling time. Another important advantage of the HSSI-ED2 is that the cabling between the distributed axes and the motion control product is reduced to just the single HSSI cable.

The HSSI-ED2 module monitors the HSSI communication channel and its own integrity. If the integrity check fails, the module automatically disables the drives and turns off all the outputs. The module front panel includes LED indicators for power, communication, drive enable, safety inputs, and each general purpose digital input and output.

The HSSI-ED2 housing is made from durable anodized aluminum with two integrated mounting options:
• DIN Rail - for mounting on industrial DIN rails (standard factory configuration).
• Surface Mount - for surface mounting using metal side brackets.
The HSSI-ED2 module is manufactured under an ISO9001 certified quality management system.

HSSI-ED2 module

The SPiiPlus products family includes motion controllers, software tools, and expansion modules

HSSI-ED2 Highlights

• Cost effective way to implement a distributed motion system.
• Easy setup and tuning with the standard SPiiPlus software tools.
• Eight opto-isolated digital inputs with overload protection and eight opto-isolated digital outputs.
• Built-in diagnostics with LED indicators.
• DIN rail or surface mount.
• Easy programming with ACSPL+ and SPiiPlus C++/Visual Basic™ Library.

Specifications

Axes
Quantity: Two.

Drive Interface
Quantity: Two.
Drive Type: For DC brush or DC brushless motors (commutated by the drive).
Torque Command: ±10V, differential, 14-bit DAC resolution.
Drive Enable Output: Opto-isolated, open collector/open emitter, 5V to 30V, up to 50mA.
Drive Fault Input: Opto-isolated, source/sink, 5V (+/-10%) or 24V (+/-20%), automatically detected.

Encoder Interface
Encoder Type: Three channel (A&B, I), differential, RS-485.
Maximum Rate: 20 million encoder counts/second.
A, B line cycle: >200nsec.
A, B low & high states: >100nsec.
A-B edge separation: >25nsec.

Inputs
Type: Opto-isolated, sink/source configurable.
Limit switch: Four (two per axis).
General purpose: Eight.

Outputs
Type: Opto-isolated, source.
General purpose: Eight.
Total current for all outputs: <350mA.

Supply
Power: External 24Vdc (±20%).
I/O: External 5Vdc (±10%) or 24Vdc (±20%), automatic detection.

LED Indicators
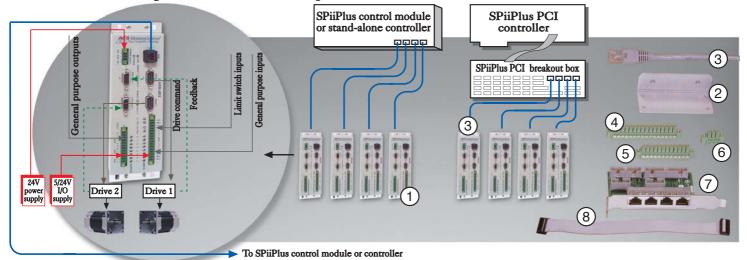Power on, communication OK, drive fault, drive enable, each right and left limit, each input and output.

Communication
HSSI cable: FTB, category 5 Ethernet-type.
Maximum cable length: 20m (65' 7.4").

Dimensions
74mm (2.91") x 190mm (7.48") x 34.5mm (1.36") [H x W xD].

HSSI-ED2 Layout and Components

How To Order

Numbers in parentheses refer to the picture above:

- **HSSI-ED2 -** One HSSI-ED*2* module (1) and two metal side brackets for surface mounting (*2*)

- **HSSI-ED2 ACC -** HSSI-ED*2* accessories. Includes:
    - One 16-pin screw-terminal I/O plug (4) - Phoenix Contact part number MC 1.5\16 STF-3.81
    - One 12-pin screw-terminal I/O plug (5) - Phoenix Contact part number MC 1.5\12 STF-3.81
    - One 3-pin screw-terminal power plug (6) - Phoenix Contact part number MC 1.5\3-STF-3.81

- **HSSI CABLE -** FTP type, category 5, 5m (16' 4.85"), standard Ethernet-type cable with RJ-45 plugs (3).

- **HSSI-HUB -** PC expansion card providing standard RJ-45 jacks for four HSSI channels. This product is not required if the SPiiPlus Breakout Box (see SPiiPlus PCI data sheet) is used. The HSSI-HUB (7) comes with a 30-pin header, 25cm (9.84"), flat cable (8) for connection to the SPiiPlus controller.

For prototyping, the following products are recommended:
HSSI-ED2, HSSI-ED2 ACC, HSSI Cable, HSSI-HUB.

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

ACS Motion Control Ltd.
Ramat Gabriel Industrial Park, POB 5668
Migdal Ha'Emek 10500, Israel
Phone: +972-4-6546440   Fax: +972-4-6546443

ACS Motion Control Inc.
14700 28Th Ave. North, Suite 25
Plymouth, MN 55447, USA
Phone: +763-559-7669 Fax: +763-559-0110

For the most updated information, please refer to www.AcsMotionControl.com