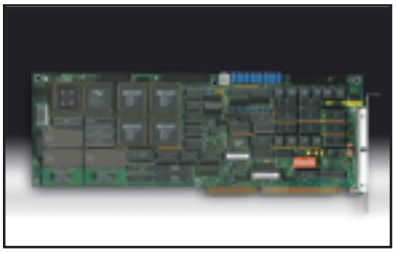
ACS Tech80
REDEFINING MOTION CONTROL

SB214PC Multi-Axis Motion Controller

Multi-Axis Motion Controller Takes Advantage of Multiprocessor-Distributed Control Architecture



AC Servo•DC Brush•AC Induction

The SB214PC is an advanced multi-axis programmable motion controller with a PC/ISA interface and a fast, bi-directional 8-bit FIFO communication channel. It can provide one to four axes of control. The controller is software configurable for the following motor types: AC Servo, DC Brush, AC Induction motors. Sinusoidal commutation is standard for AC Servo and AC Induction motors.

The SB214PC supports encoder as primary feedback and encoder as secondary feedback or master. Its I/O consists of dedicated safety inputs per axis, dedicated emergency stop, 16 isolated logic inputs and 16 isolated digital outputs.

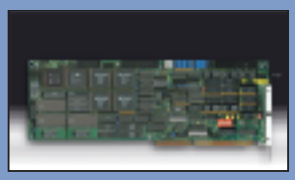
ACS-Tech80 controllers are based on state-of-the-art, proprietary technology that has proven itself in many demanding applications, such as semiconductor assembly and testing, electronic assembly and inspection, digital printing, medical imaging, and packaging. Built-in capabilities simplify programming common applications, such as advanced pick & place, master/slave, and electronic gearing and camming.

Windows tools are provided for set-up and tuning of the control modules and for developing application programs. Libraries for Microsoft C/C++, Borland C/C++ and Visual Basic are available for DOS, Windows 3.11/95/98/2000/NT and Linux. The libraries support multithreading in Windows NT.

Every module is manufactured under an ISO9001 certified quality management system to meet stringent safety and EMC standards, and is CE compliant.

- Fully Programmable Operation
- Powerful I/O Handling with Advanced PLC Capabilities
- 20kHz Sampling Rate, Independent of the Number of Axes
- Modifiable Servo Algorithms
- Advanced Real-Time Position Event Generator-PEG
- Comprehensive Safety, Diagnostics and Protection
- Interactive Application Development Suite
- Comprehensive C, C++ and Visual Basic libraries for DOS, Windows 3.x/95/98/2000/NT and Linux.

CE



Main Features

Fully Programmable Standalone and Host-Interfaced Operation:

- Easy to program using ACSPL, a powerful high level language common to all ACS-Tech80 control modules
- 32k of user-programmable memory
- General Purpose I/O: 16 inputs and 16 outputs, all opto-isolated
- Four 12-bit analog inputs that can be used for feedback, such as, force and position control
- Four 10-bit analog outputs for monitoring and auxiliary control functions
- Powerful I/O handling with advanced PLC capabilities
- Teach & go for up to 1,024 points
- Built-in smart joystick interface
- RS-232 high-speed serial communications interface, up to 57600 baud rate

Special Features for Demanding Applications:

Master/Slave:

This mode is characterized by its following accuracy, superimposed move capability, ability to switch "on-the-fly" from slave mode to velocity mode and vice versa through comprehensive software support. This feature has proven itself in challenging applications such as industrial flying shears, coil winding, multi-color printing and high-accuracy scanning and plotting.

Registration:

This feature allows the destination position of the axis to be changed on-the-fly based on the position of an external sensor captured during a move. The registration moves have a variety of uses including labeling and high-speed printing. The 'Search-For-Contact' registration mode is specifically designed for pick and place applications such as wire bonding, die attachment and SMT assembly.

Position Event Generator (PEG):

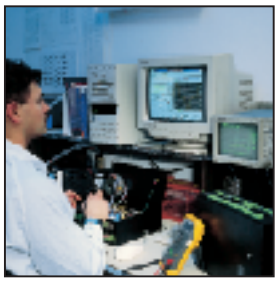
The PEG function generates real time, position-triggered output to activate external events based on position. It has a position compare accuracy of +/- 1 count at up to 5 million counts/second, and is designed for such demanding applications as high accuracy laser cutting and automatic optical inspection (AOI) and scanning systems.

Outstanding Performance and Capabilities:

- Fully digital position, velocity at 20kHz sampling rate, for excellent dynamic and tracking performance
- Dual loop capability supports two encoders (per axis), one mounted on the motor and one on the load, for accurate belt-driven and lead-screw based applications

Comprehensive Safety, Diagnostics, and Protection:

- Programmable automatic routine for each fault, error, and exception
- Real-time data collection of one or two variables, programmable sampling rate up to 1kHz.
- CE marked, meets European safety standard EN60204-1 and EMC standards EN50081-2 (emission) and EN50082-2 (immunity)



Powerful Programming and Support Tools:

- ACS Adjuster for Windows: Interactive tool for setting up and tuning
- ACS Debugger for Windows: Development environment for ACSPL applications
- ACS Saver/Loader for Windows: Tool for copying system setup and application data from one controller to another
- ACSLIB C Libraries: Comprehensive C, C++, and Visual Basic libraries for DOS, Windows 3.11/ 95/ 98/ 2000/ NT and Linux

Product Specifications

Position Control:

Sampling Rate: 20kHz

Control Algorithms:
Pgain, acceleration feed-forward, automatic velocity feed-forward, anti-reset windup

Trajectory Calculation Rate: 1kHz

Range: ±999,999,999 counts

Accuracy: ±1 encoder count

Position Feedback:
Primary encoder per axis, secondary encoder for Z and T axis

Position Capture Accuracy:
±1 count at up to 5,000,000 counts/second

Position Event Generator (PEG™):
Position Compare Accuracy: ±1 count at speed up to 5,000,000 counts/second with opto-isolation

Repetition Rate:
Random Mode: 5 events/0.001 second
Incremental Mode: Up to 5MHz

Velocity Control:

Sampling Rate: 20kHz

Control Algorithm:
PI + second order low pass filter

Range: Up to 128,000,000 counts/second

Resolution: 1 count/second

Velocity Accuracy:
Long Term: 0.005%
Short Term: 0.01% - 0.5% (system-dependent)

Acceleration Range:
Up to 2,000,000,000 counts/second^2

Acceleration build-up time (Smooth Factor): 1-255 millisecond

Position & Velocity Feedback:

Primary: Incremental encoder per axis

Secondary: Incremental encoder per axis pair (X-Z, Y-T)

Encoder: Incremental, 3 channel (A, B, I), differential line drivers, 0-5V, count rate up to 32,000,000 counts/second

Supply Voltage: 5V

Maximum current consumption from onboard supply: 100mA per encoder (600mA total) (Use external supply if higher current is needed.)

Dual Loop Capabilities:
Primary feedback (encoder only) for velocity and commutation; secondary feedback for position-

Drive Interface:

Commands:
Two per axis, analog (for sinusoidal commutation) or PWM (jumper configured) opto-isolated, ±10V, 10-bit resolution

Maximum Offset: ±50mV

Drive Enable Output: One per axis

Type: Open collector

Output Current: 50mA

Propagation Delay: <1msecond

Drive Fault Input: 1 per axis

Type: Sink

Input Voltage Range (Internal/External Supply ^ by jumpers): 5 VDC (±10%), <1msecond propagation delay

I/O:

General Purpose Inputs:
16 inputs, 5V, opto-isolated

General Purpose Outputs:
16 outputs, 2.5mA current per output, 5V, opto-isolated

Analog Inputs:
Two single-ended inputs (0-5V), 10-bit resolution; four differential inputs (±10V), 12-bit resolution

Analog Output:
Four ±10V outputs, 10-bit resolution. One general purpose output, ±10V, 8-bit resolution

Safety Inputs:
Left and right limit per axis, E-stop, <1msecond propagation delay

Controller:

Dual Processor Architecture:
- 20MHz Intel 80C196KD for high level tasks and management
- 80MHz SB2500 ACS Servo Processor per axis for real-time control tasks

Memory:
Firmware: 256k
RAM: 256k
Nonvolatile Memory:
128k, 100,000 write cycles
User Program Memory: 32k

Communications:

Bus: ISA bus, 8-bit data width, through 1K FIFO in each direction
Serial: RS232, up to 57,600 baud

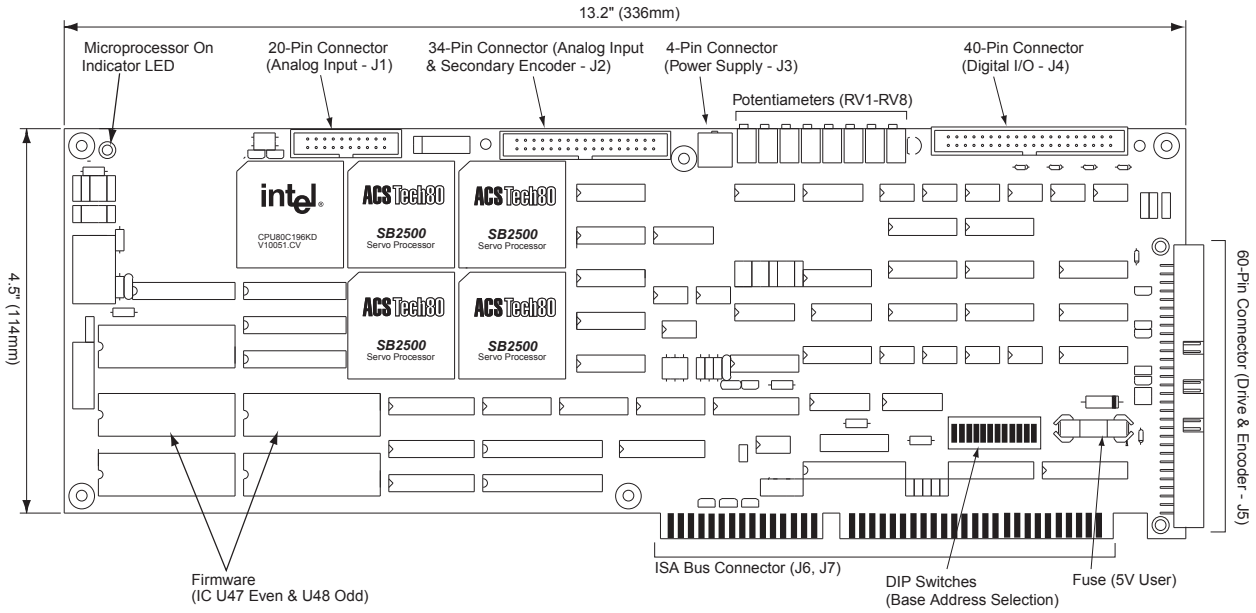
Power Consumption:

5V (1.5A), ±12V (.25A)

Specifications

Dimensions

13.2” H x 4.5” W (336mm x 114mm)



How to Order

Example: **SB214PC - 4**

PC	PC/ISA Controller
2	2 Axis Configuration
4	4 Axis Configuration

(Documentation and ACSPL software tools are included)

ACSLIB ACSPL C, C++ and Visual Basic Libraries

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, please consult the hardware manual.

Version 1.20 (January 2001)

ACS Tech80
REDEFINING MOTION CONTROL

ACS-Tech80 Inc.
7351 Kirkwood Lane North
Maple Grove, MN 55369-5219 USA
763-493-4080
Toll-Free: 800-545-2980
Fax: 763-493-4089
info@acs-tech80.com

ACS-Tech80 Ltd.
Ha’Mada Avenue
Ramat Gabriel Industrial park
POB 5668
Migdal Ha’Emek
10500 ISRAEL
+972 4-6546440
Fax: +972 4-6546443
info@acs-tech80.co.il