

Stepper Motor Drive Training System

SMT-2000



- Includes motors, cables, driver, application module (Rotary Table), data acquisition card, software, Instruction Manual
- Connects to a PC parallel printer port
- Interactive motion control software included
- Up to 6 motors (3 SMTS-2000 systems) on a single PC
- Operates with data acquisition boards
- Subroutine libraries in C, VB and Basic etc.
- Powerful multi-axis coordinated motion
- General purpose Digital I/O port
- No motion control experience needed
- Very cost effective & affordable price

The SMT-2000 Dual Stepper Motor System **contains everything you need** to accomplish motion control with PC - no cards to install, cables to build, or components to match. Simply connect to the parallel port on your computer just like a printer, load the software, and GO! Within minutes you'll have complete control over the direction, position, and speed of each motor. **Up to 6 motors (3 SMT-2000 systems)** can be connected to your computer for those multi-axis projects.

Programming is simple with our **interactive motion control programs** and command-line interpreter. Custom programs are easy to create using our subroutine libraries for **C, VB, LabVIEW, TestPoint, HPVEE, DasyLab** etc.

Each SMT-2000 system **includes** 2 stepper motors, 2 10' motor cables, printer port cable, 2 home switches, drive/power supply box, software and extensive documentation.

The SMT-2000 -2000 system can be operated from an AC outlet or from a battery. You must have a PC with a parallel printer port.

Use the SMT-2000 system to control our [Rotary tables](#). Increase the torque and resolution of a stepper motor using our [Pulley Reducers](#).

What is a Stepper Motor?

A stepper motor is a special kind of motor that moves in individual steps which are usually .9 degrees each. Each step is controlled by energizing one or more of the coils inside the motor which then interacts with the permanent magnets attached to the shaft. Turning these coils on and off in sequence will cause the motor to rotate forward or reverse. The time delay between each step determines the motor's speed. Steppers can be **moved to any desired position reliably** by sending them the proper number of step pulses.

Unlike servo motors, steppers can be used "open-loop" without the need for expensive encoders to check their position. Stepper motors are much **more cost-effective** than servo systems due to their simplified control and drive circuitry. There are no brushes to replace in a stepper motor, eliminating the need for maintenance. Even though a stepper motor system can not achieve the speed of a servo motor system, their ease of use allows them to be the preferred solution for many of today's computerized motion control systems.

The SMCTS-2000 Motion Control Software

Each SMT-2000 system comes complete with our SMT-2000 motion control software, which gives you complete control of up to 6 motors from a single computer. Motor speed, travel distance, limits, units, and other parameters can be edited easily and saved to disk.

Single and dual-motor moves, including **linear and circular interpolation**, are also possible.

The powerful teach mode feature creates programs automatically as you control motors via the keyboard or joystick. These BASIC-like programs can be maintained with the editor, saved to disk, and recalled whenever needed. On-Line help guides your usage and gives explanations for each motor parameter.

The software can be run from floppy or hard disk (1.5MB free required) and will operate on high-speed and even low-end XT-class systems. A 386 or faster processor, mouse, and hard disk are recommended for best performance, and DOS or Windows can be used.

The SMT-2000 software can be run in a window on **any version of MS Windows and true Windows programs can be created** with the VB and C source code provided. For windows XP, 2000 and NT, use the [PortTalk utility](#) to allow port access.

SMT-2000 Program Features

- Control of up to 6 motors
- On-line help
- Keyboard / joystick control
- Teach mode
- Absolute / relative moves
- Linear interpolation
- Circular interpolation
- User-definable units
- Adjustable acceleration / deceleration
- Backlash compensation
- Programmable soft limits
- Half and full step modes
- Use from DOS batch files
- Program editor
- And much more

Subroutine Libraries

The SMT-2000 system also **includes a complete set of subroutine libraries** written in all popular languages including VB, C, and QuickBasic. This allows the creation of custom motion control programs,

which provide the features and user interface you desire. The subroutine libraries can be used in conjunction with libraries from data acquisition products to solve complex control and automation tasks. Source code for each of these libraries are supplied along with documentation and example programs.

Languages Supported

- Visual Basic for Windows
- C
- GW-Basic
- Q-Basic
- Quick-Basic
- Visual Basic for DOS
- Pascal

SMT-2000 system contains



Each SMCTS-2000 system contains drive electronics, 2-stepper motors, 2-home switches, 2-10' motor cables, a printer port cable, SMCTS-2000 software, subroutine libraries, and extensive technical documentation.

An input/output port is included on each unit. This gives the user 3 digital inputs and 2 digital outputs to attach to external devices such as cutting motors, lamps, lasers, limit switches, or level sensors.

The torque curve charts below can be used to determine the available torque for any speed. As you can see, torque decreases as motor speed increases. Torque can be increased on the **SMT-2000** and b models by using our [pulley reducer](#).

The maximum speed that your application can operate at depends on many factors including payload, friction, acceleration, and computer speed. It's best to have 30-50% more torque than required. Although the **SMT-2000** software will work on very slow computers, we recommend a 386 for best performance. Feel free to call us to discuss your torque requirements.

Specifications

With 3 times the torque of the **SMT-2000** system, the **SMT-2000** can be used with our X and XY positioning tables and rotary Table to move larger payloads faster.

| | |
|-------------------|--|
| Size | motors, 2.3" dia, 4" long, 1/4" shaft |
| Resolution | .9 degree steps, (400 per revolution) |
| Speed | 10,000 steps per second maximum * |
| Torque | 150 in/oz holding, 50-10 in/oz running |

Increase torque and resolution by using the [Pulley Reducer](#).

Rotary Table

RT-2000

- Laboratory Automation
- Factory Automation
- Sensor Positioning
- Camera Positioning
- Use with our [SMT-2000 system](#)



The RT-2000 rotary positioning table is designed using our unique, cost-effective philosophy. The RT-2000 can be used to position a variety of payloads such as cameras, lasers or test fixtures. The 12" diameter aluminum top plate has 24 tapped holes to attach your application.

An endless variety of configurations can be created by attaching a linear positioning table such as our [Z-2000](#) or [X-9000](#) to the RT-2000. The RT-2000 can be driven with the [SMT-2000 system](#) and can also be used with a [pulley reducer](#) for greater performance.

Specifications

| | |
|------------------------|---------------------------------|
| Maximum Payload | 10 pounds |
| Accuracy | 0.1 degree |
| Resolution | 0.15 degrees per .9 degree step |
| Repeatability | 0.1 degree |
| Maximum Speed | 45 degrees per second |