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PC-Based

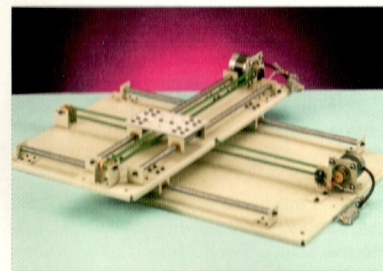
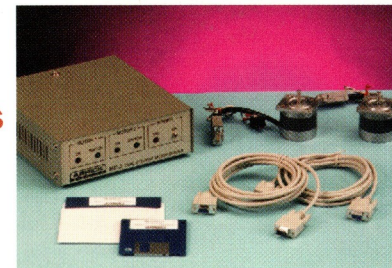
Motion Control

2001

Made Simple and Affordable

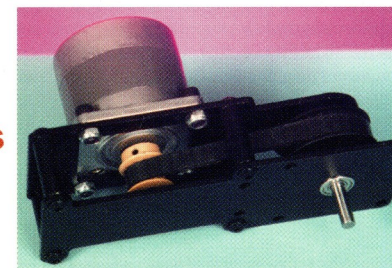
For Laboratory & Factory Automation, Machine Control, Research, Instrumentation

Stepper Motor Systems

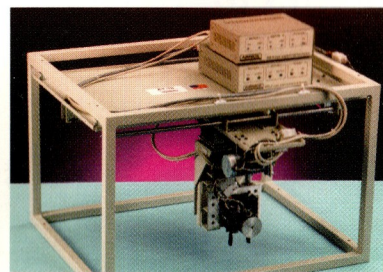


Positioning Tables

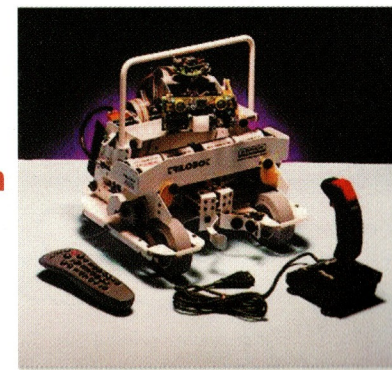
Grippers, Pulley Reducers



Robotic Workcells



Robots for Research and Fun



www.robotics.com

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A letter from the President

Welcome to our 2001 catalog of easy-to-use motion control systems and mobile robots. In case you haven't heard about Arrick Robotics or seen our ads in trade journals, we've been building PC-based stepper motor systems and positioning tables since 1987. Our small size makes us easy to deal with, responsive to your needs, and keeps the price/performance ratio of our products the best in the industry. Best of all, our staff really enjoys their work and it shows in the quality of the products we produce.



We know your time is important, so we've designed this condensed catalog to deliver the facts. Instead of a lengthy sales pitch, you'll find color pictures of each product along with descriptions, features, and specifications. However, if you need additional details such as mechanical drawings, please visit our web site. We've gone to great lengths to make ordering easy. Check out the details on the next page to see for yourself.

The types of products you'll find in this catalog are some of the most useful, cost-effective motion control systems available. We've spent a lot of time making our products plug-and-go so you don't have to become a control expert just to make your project work. Connecting

one of our systems is as easy as attaching a printer to your computer. Systems are complete - even the tools are included! But don't let the price and simplicity fool you, these products are designed with the valuable, high-end features you need, and to have a long life span. Many fortune 500 companies are using our products right now.

The benefits of our motion control systems become obvious when you find out just how easy they are to use. Applications include dispensing, laboratory automation, pick and place, assembly, sensor positioning, satellite dish control, winding, computer controlled exhibits, and general-purpose machine control. Users include large companies, small companies, contractors, and individuals who want their project completed on time and within budget with minimal hassle.

Let me also introduce you to our Internet web site that went on-line back in February of 1995. With a lot of work and with feedback from users, we now have a truly useful way to provide information about our products. The response has been phenomenal and our customers love it. You'll also find tons of great robotics-related information there too. Just go to www.robotics.com to see for yourself.

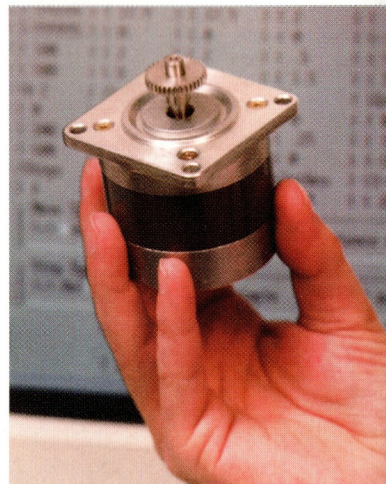
Our product line now includes two mobile robots: The **Trilobot** which is mainly intended for University level research and for serious robot hobbyists, and **ARobot** using the Basic Stamp is designed to be a cost-effective mobile robot for experimenters and educators. If you're looking for the latest in mobile robotics technology at a sensible price, check them out on our web site and on page 12-15 of this catalog.

One last note, we're always developing new products, so don't be shy about asking for something you don't see. Almost all of our products were designed because a customer asked for them.

I'm committed to making Arrick Robotics work for you. I don't get paid if you're not pleased with our products and service. If you have any comments or suggestions, I would greatly appreciate them.

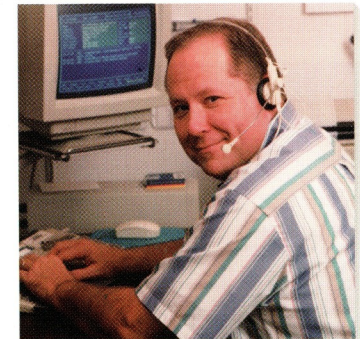
Best Regards,

Roger Arrick,
President
roger@robotics.com

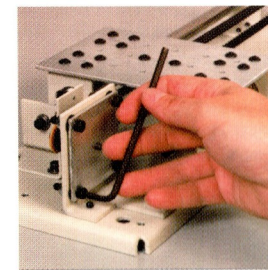


Placing Orders is Easy

We know your time is important, so we've gone to great effort to make dealing with us quick and easy. In many cases our computer will already have your address on file. We can accept your order via phone, fax, email, or mail. Payment methods include check, money order, and major credit cards such as Visa, Mastercard, and American Express. Sorry, we don't sell on open account (Net 30 days, etc). We ship most orders from our stock in Texas the very same day. Select from a variety of shipping methods including ground and air service. We can also bill your company freight account if needed.



Unsurpassed Technical Support



We offer technical support for our products both before and after the sale. We'll be happy to offer advice and guidance about using one of our products with your application. And we'll be the first to tell you if they don't fit your needs. We're also happy to recommend products from other companies when needed. The vast majority of our users don't require help due to the simplicity of our designs, but if the need ever arises, we're there. Each of our products carry a 1-year warranty covering both parts and labor. Our support services can be accessed via phone, fax, or by e-mail at info@robotics.com.

View Our Internet Web Site

We've created a vast information resource on the Web to serve our current and future customers.

At our site, you'll find most of the information needed to make decisions about the use of our products including applications, specifications, mechanical drawings and prices. You can print any page or drawing of interest using your web browser.

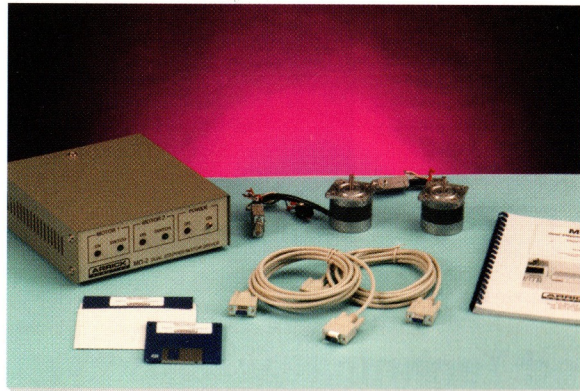
Fill out our on-line Information Request Form to request additional product information or to ask technical questions. The form will be automatically e-mailed to us for prompt response.

We also provide information that may be useful to automation builders such as sources for mechanical parts including gears and pulleys along with links to other related information that can be found on the Internet. These include products and services that could help you with your application.

You can contact us via e-mail at info@robotics.com. Visit us now at:

<http://www.robotics.com>

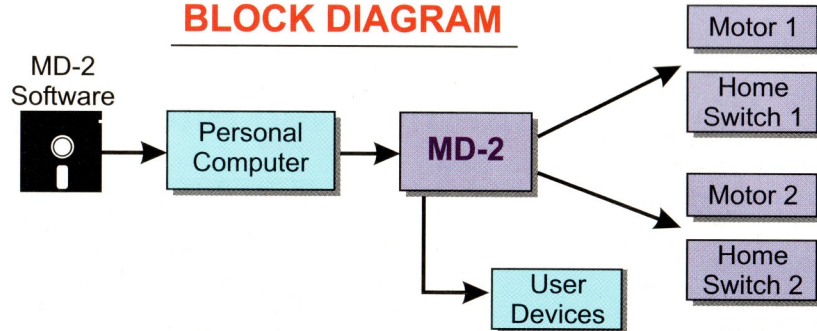




Would you like to automate a task but don't know how? Have you looked through some motion control catalogs and been shocked by the complexity? Most vendors expect you to select and match motors, drivers, power supplies, and cables, then write your own software. We've cut through the confusion and created the **complete** motion control solution for those who don't want to design their own. The MD-2 Dual Stepper Motor System contains everything you need to accomplish motion control with an IBM style personal computer. No cards to install, no cables to build and no 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 MD-2 systems) can be connected to your computer for those multi-axis projects. Programming is simple with our interactive motion control programs and DOS command-line interpreter. Custom programs are easy to create using our subroutine libraries. There are 2 MD-2 models to choose from to fill a variety of torque requirements. Each MD-2 system includes 2 stepper motors, 2 10' motor cables, printer port cable, 2 home switches, drive/power supply box, software and extensive documentation. The MD-2 system can be operated from an AC outlet or from a battery. You must have an IBM compatible personal computer with a parallel printer port. Need assistance? - give us a call, we'll be glad to help. See www.robotics.com for more information.

BLOCK DIAGRAM



Stepper Motor Basics

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 expensive encoders. 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.

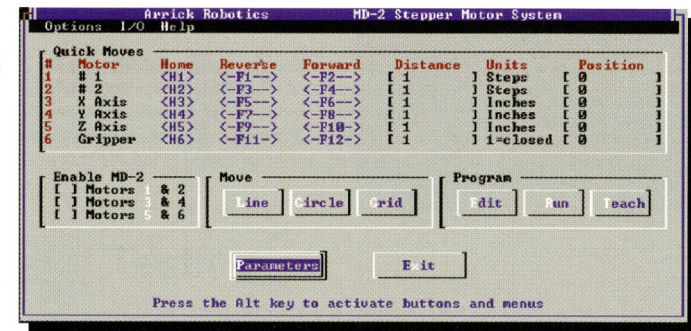
P.O. Box 1574 Hurst, TX 76053 USA
 Ph: (817) 571-4528 Fax: (817) 571-2317
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Powerful software features to solve simple and complex automation tasks

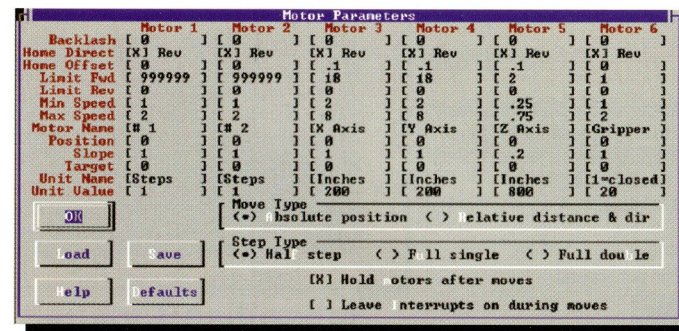
- Control of up to 6 motors
- On-line help
- Keyboard/joystick control
- Teach mode
- Absolute/relative moves
- Linear interpolation
- Circular interpolation
- User-definable units
- Adjustable accel/decel
- Backlash compensation
- Programmable soft limits
- Half and full step modes
- Use from DOS batch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

And much more...



Each MD-2 system comes complete with our DOS-based motion control program, 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 low-end XT-class as well as high-speed systems. A 386 or faster processor, mouse, and hard disk are recommended for best performance.

Adjust motor speed, acceleration, limits, units, and other parameters



■ Parameters for each motor are easy to edit.

■ On-Line help guides your selection and suggests optimum settings.

■ Fine-tune values to maximize performance.

■ Save and load parameter files from disk for different projects.

Subroutine Libraries for Custom Programs

The MD-2 system also includes a complete set of subroutine libraries written in all popular languages. 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. Programming languages supported are GW-Basic, Q-Basic, Quick-Basic, Visual Basic for Windows, Visual Basic for DOS, Pascal, and C. Source code for each of these libraries are supplied along with documentation and example programs. Win NT/2000 not supported.

2 Models to Choose From

Two different MD-2 models are available to meet a wide variety of torque requirements. Each MD-2 system contains drive electronics, 2-stepper motors, 2-home switches, 2-10' motor cables, a printer port cable, MD-2 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 by using our PR23 pulley reducer found on page 10. 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 MD-2 software will work on very slow computers, we recommend a 386 for best performance. Feel free to call us to discuss your torque requirements.

MD-2a

\$700.00

Description: The MD-2a is our smallest system and is capable of driving all of our linear and rotary positioning tables with moderate payloads and speed.

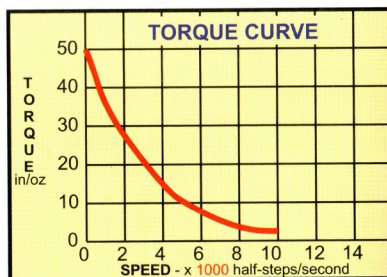
Motors: Size #23, 2.25" diameter, 2.25" length.

Shafts: .25" diameter, .75" length.

Resolution: .9 degree half-steps (400 per revolution).

Maximum Speed: 10,000 half-steps per second.

Holding Torque: 50 in/oz.



MD-2b

\$1000.00

Description: Having 3 times the torque of the MD-2a system, the MD-2b can be used with our X and XY positioning tables to move larger payloads faster. Not compatible with our RT-12 rotary positioning table or Z-2 due to motor length.

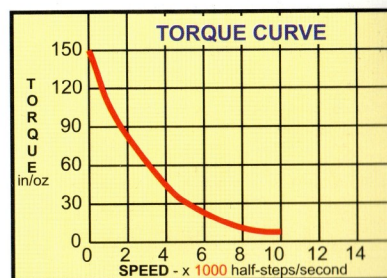
Motors: Size #23, 2.25" diameter, 4" length.

Shafts: .25" diameter, .75" length.

Resolution: .9 degree half-steps (400 per revolution).

Maximum Speed: 10,000 half-steps per second.

Holding Torque: 150 in/oz.



Use our PR-23 pulley reducer to enhance torque and resolution.
See page 10.

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Ph: (817) 571-4528 Fax: (817) 571-2317
Web: <http://www.robotics.com>
E-mail: info@robotics.com



Applications and Possibilities

Shown here are just a few of the possible uses for the MD-2 motion control system and our positioning tables. Other applications include satellite dish positioning, vent control, museum exhibits, camera positioning, laser engraving, full-scale automation prototyping, and even car steering. Call us today to discuss your application.

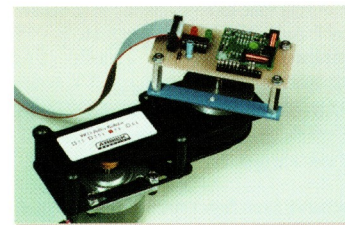
Pick and Place

Our Robotic Workcells (page 11) can be used to automate repetitive tasks in a laboratory, factory, or workshop. Use our GR-2 gripper to grasp items such as test tubes, crucibles, trays, or electronic parts. Use our PR23 pulley reducer to enhance resolution, torque, and speed for more demanding projects.



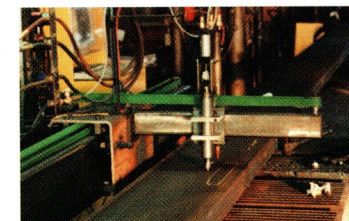
Testing

PC-based test fixtures are commonplace in today's factories. Our motion control products are designed to work with standard office-style personal computers which are cost-effective and easy to maintain. Systems can be designed and built quickly because Engineers and Programmers are familiar with its architecture.



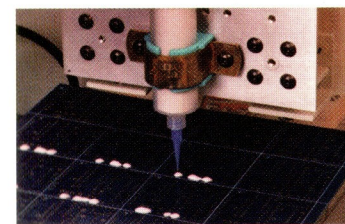
Computer Controlled Cutting

A variety of cutting, engraving, etching, and marking operations can be performed with our MD-2 motion control systems. Laser, plasma, and other types of tooling can be used to work with almost any material. Large machines can be automated using our MD-2c system with its powerful size 34 motors. Lead-screws, rack-and-pinion, and belt-driven mechanical systems can be utilized.



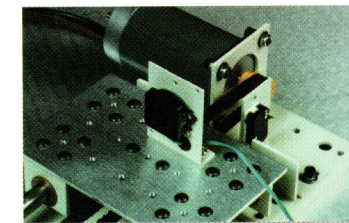
Dispensing

Dispensing can be performed automatically using the MD-2 system to control a positioning table which guides either the dispensing tool or the part. The digital output signals on the MD-2 system can be used to activate the dispensing pump. Possible materials include adhesive, fluids, or gasket compound.



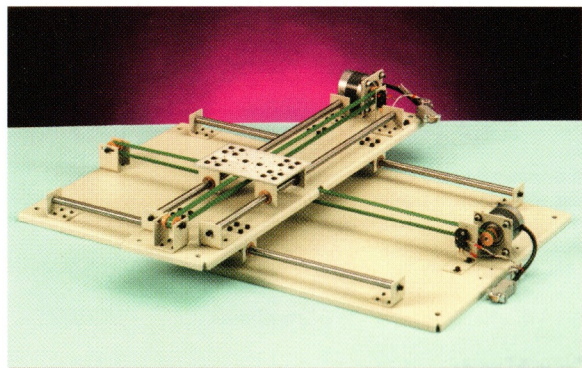
Sensor Positioning

Our motion control systems are perfect for positioning sensors, cameras, and probes. The MD-2 software can be integrated with data acquisition products such as A/D and digital I/O boards using our subroutine libraries. Motion sequences can be created using the teach mode in our MD-2 program. A Basic-style program is automatically created which can then be edited and saved to disk.



Phone: (817) 571-4528 Fax: (817) 571-2317 E-Mail: info@robotics.com

Affordable Linear Positioning Systems



Now it's easy to position sensors, automate pick-and-place operations or perform light-duty machining. Our X and XY series belt-driven positioning tables are the perfect alternative to traditional lead-screw driven tables. The low-stretch timing belt provides an incredible 1/100" accuracy (twice the thickness of a sheet of paper) at speeds rivaling lead-screw models. All positioning tables can be controlled easily with our MD-2 stepper motor systems - just attach the motor, connect the home switch, and you're ready! Nothing else to buy - even the tools are included. The 4" x 6" top plate has 15 mounting holes to attach your

instrument or tool. An aluminum frame, polished steel shafts and bronze bearings make the X and XY series positioning tables lightweight, accurate, and affordable. Finally, an easy way to implement those automation tasks. Have any questions? Give us a call, we'll be glad to help. See www.robotics.com for more information.

Increase Performance with a PR23 Pulley Reducer

Use these positioning tables with our PR23-2.5 pulley reducer (page 10) to achieve even faster speeds, more torque, and a resolution of .002" per step. Select the MD-2b motor control system (page 6) for maximum performance.

Specifications

When used with the MD-2b stepper motor system and a 2 pound payload -

Accuracy: +/- .010" per foot

Resolution: .005" per .9 degree step

Repeatability: .005"

Maximum X speed: 6" per second

Maximum Y speed: 8" per second

Note: Payloads up to 10 pounds can be used with decreased speed and accuracy.

Applications

- Sensor Positioning
- Laboratory Automation
- Pick and Place Operations
- Dispensing
- Training
- Automated Testing
- Light-duty Machining
- Automated Test Probe
- Engraving
- Camera Positioning

Package Includes

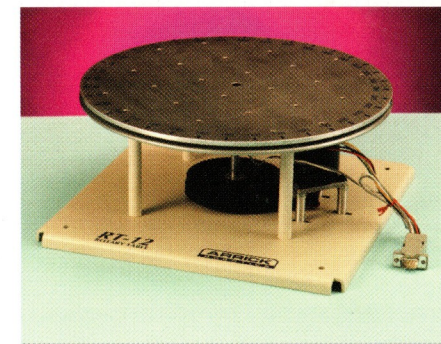
- Linear Positioning Table
- All Necessary Hardware
- Home Switch
- Tools for Setup
- Documentation

Pricing

X-9	Single axis positioning table, 9" total linear travel.	\$400.00
X-18	Single axis positioning table, 18" total linear travel.	\$450.00
X-30	Single axis positioning table, 30" total linear travel.	\$750.00
XY-9	Dual axis positioning table, 9" of travel on each axis.	\$750.00
XY-18	Dual axis positioning table, 18" of travel on each axis.	\$850.00
XY-30	Dual axis positioning table, 30" of travel on each axis.	\$1,500.00

Accurate, Lightweight, Easy-to-use

We've designed a rotary positioning table using our unique, cost-effective design philosophy. The RT-12 can be used to position a variety of payloads such as cameras or lasers. 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-2 or X-9 to the RT-12. The RT-12 can be driven with the MD-2a motor system and can also be used with a PR23-3 pulley reducer for greater performance. See www.robotics.com for more information.



Specifications

When used with the MD-2a stepper motor system and a 2 pound payload -

Accuracy: .1 degree

Resolution: .15 degrees per .9 degree step

Repeatability: .1 degree

Maximum speed: 45 degrees per second

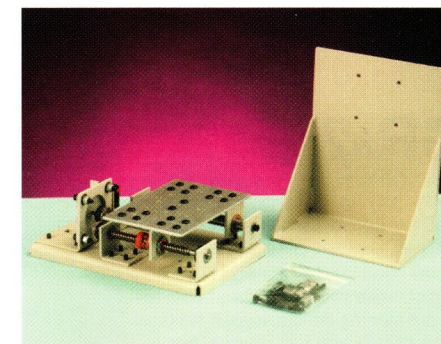
Pricing

RT-12 12" Rotary positioning table \$300.00

Lead-Screw Positioning Table

Z-2

Need the precision of a lead-screw? Need short travel against gravity? Our Z-2 table can solve the problem. Constructed with an aluminum frame, precision ground lead-screw, and an anti-backlash nut, the Z-2 is perfect for short X, XY and XYZ applications. The Z-2 is easily attached to our X and XY tables using the SK-4 spacer kit (horizontal mounting) or the BR-2 bracket kit (vertical mounting). Connect the Z-2 to an X-9 to make an XY table with 9 inches of travel in one direction and 2 inches in the other. Connect 3 Z-2 tables together and create a 3-axis workcell. The possibilities are unlimited! The Z-2 is easily controlled using our MD-2a motor system. See www.robotics.com for more information.



Pricing

Z-2	Single axis positioning table, lead-screw, 2" total travel.	\$400.00
BR-2	Right angle bracket w/hardware, for vertical mounting of Z-2.	\$75.00
SK-4	Spacer kit, for horizontal mounting of Z-2.	\$25.00

Specifications

When used with the MD-2a stepper motor system and a 2 pound payload -

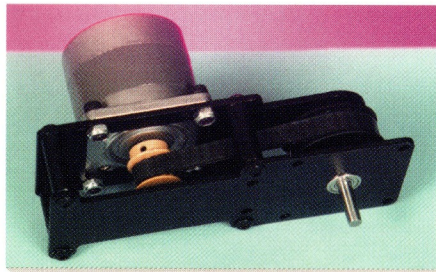
Accuracy: +/- .005"

Resolution: .00125" per .9 degree step

Repeatability: .002"

Maximum speed: 2" per second

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 Ph: (817) 571-4528 Fax: (817) 571-2317
 Web: <http://www.robotics.com>
 E-mail: info@robotics.com

Increase Motion Performance**Pricing**

PR23-2	Pulley Reducer, 2:1	\$150.00
PR23-2.5	Pulley Reducer, 2.5:1	\$150.00
PR23-3	Pulley Reducer, 3:1	\$150.00
PR23-4	Pulley Reducer, 4:1	\$150.00
PR23	Pulley Reducer, all ratios	\$200.00

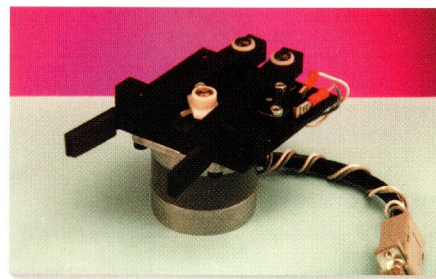
Specifications

Maximum output torque: 300 in/oz
Maximum output speed: 1000 RPM
Backlash: 30 arc minutes

The PR23 series of pulley reducers provide a cost-effective alternative to gear reducers often costing \$500 or more. Use the PR23 with any NEMA size 23 stepper or servo motor to provide an increase in resolution and torque. Vibration reduction and load matching benefits can also be achieved to enhance the performance of many mechanical systems. Perfect for belt-driven and lead screw-driven XY positioning tables. Even though the output speed is reduced by the reduction ratio, some systems will actually have their overall speed performance increased due to better matching of the motor with the load. This is particularly true on our X and XY belt-driven positioning tables where speeds can be increased by as much as 4 times by simply adding a 2.5:1 reduction. The PR23 face plate appears as a size 23 motor with a 1/4" shaft. This allows the user to simply remove the motor from the mechanical system, mount it to the reducer, then mount the reducer on to the system. Timing belt tension is easily adjustable. Pulleys can even be swapped within the housing to provide an 'increase' function if needed. Five models are available providing ratios of 2:1, 2.5:1, 3:1, 4:1, and one model capable of all ratios. The simple yet rugged design incorporates precision ball bearings and requires no maintenance. Everything you need is included - pulleys, belts, hardware, and wrenches. See www.robotics.com for more information.

GR-2 Dual-Finger Gripper

Need to pick up test tubes in a laboratory or manipulate small parts on an assembly line? The GR-2 gripper is easier to use than conventional pneumatic units and doesn't require an air supply. Simply attach a size 23 stepper motor and mount the gripper to the top plate of our positioning table using the supplied hardware. A home switch provides open status to the computer. The cam & spring design provides individual finger compliance and is capable of gripping the inside or outside of an object. Finger extensions are reversible for small or large payloads and can be replaced with customized ones for special applications. Add the GR-2 to our positioning tables to create a complete robotic workcell.

**Specifications**

Specifications when used with the MD-2a stepper motor system and the supplied finger extensions.

Grip Range: .5" Closed, .88" Open
Grip Force: 4 ounces..
Resolution: .019" per .9 degree step.
Repeatability: .02"

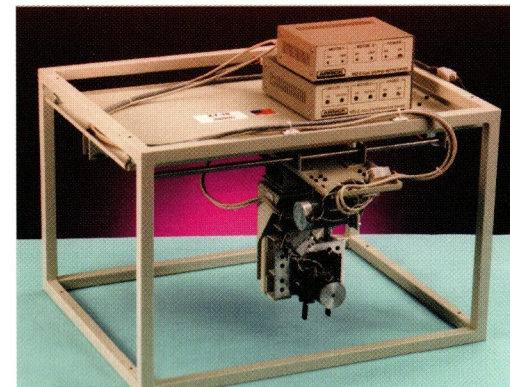
Maximum open speed: .1 second.

Pricing

GR-2	Dual-Finger Gripper	\$250.00
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Affordable Automation

Now's the time to automate those tasks currently being performed manually. By combining our MD-2 stepper motor systems with our XY positioning table and a gantry stand, a complete robotic workcell can be created. Our Z stage can be added to create 3-axis motion. In many cases, an XYZ workcell can replace a very elaborate robotic system at a fraction of the cost. Just connect to your personal computer, attach a tool and your system is complete. Add our GR-2 Gripper for even more capability. Robotic workcell packages come complete with motor control systems, positioning tables, hardware and an accessory kit which includes a parallel printer port, cables, cable mounting hardware, and a T-handle hex wrench.



RW-9b	9"x9"x2" Robotic Workcell, XY-9, MD-2a, MD-2b, ST-9, Z-2, BR-2, Accessory kit.	\$3,200.00
RW-18b	18"x18"x2" Robotic Workcell, XY-18, MD-2a, MD-2b, ST-18, Z-2, BR-2, Accy kit.	\$3,300.00

Accessories Improve Capabilities

Improve speed, resolution, and torque by adding 2 PR23-2.5 pulley reducers (page 10) to your Workcell. Add our GR-2 Gripper (page 10) to allow your workcell to grasp objects such as test tubes and other parts.



Laser etching example using an MD-2b and an XY-18 positioning table

Unlimited Uses

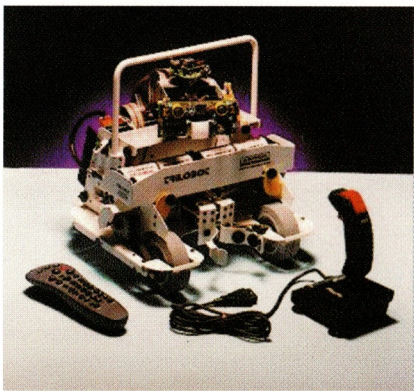
- Sensor Positioning
- Laboratory Automation
- Pick and Place Operations
- Dispensing
- Training
- Automated Testing
- Light-duty Machining
- Automated Test Probe
- Engraving
- Camera Positioning

Stands

Each Robotic Workcell includes a stand for gantry (upside down) operation of the positioning table. These stands can be purchased separately when our Z-2 and other accessories are not required. Constructed to minimize vibration and flex. See www.robotics.com for more information.

ST-9	Gantry stand for use with XY-9	\$350.00
ST-18	Gantry stand for use with XY-18	\$350.00

State-of-the-art



The Trilobot mobile robot combines the latest in microcontroller and sensor technology together with intelligently designed mechanical features to create a capable, yet affordable robotic platform. Perfect for research in artificial intelligence, artificial life, autonomous navigation, robotics technology, education, security, telepresence, and robot competitions.

Commands can be sent to the on-board controller from a PC using a serial (RS-232) interface. The user can place an embedded computer on-board or communicate using radio modems. The user can then control the Trilobot using any terminal program or by using popular programming languages such as C, BASIC, or Pascal. High-level software must be written by the user.

Features

- 12"x12"x12" body dimensions, 11 pounds.
- Dual differential drive with DC gear motors with optical encoders.
- Maximum speed: 10" per second.
- Surfaces: Tile, concrete, low pile carpet, moderate bumps and inclines.
- 2 pound payload capacity for radio data link, embedded PC, etc.
- Thumb screws make removing panels easy.
- Removable battery pack uses 8 standard D-cells.
- Pan/tilt head positions sensors quickly.
- Stationary mast contains additional sensors including a digital compass, temperature, and light.
- Gripper can grasp and lift cans and balls.
- Programmable control from user's desktop PC or on-board embedded PC.
- Infrared communications from TV remote control and other Trilobots.
- RC receiver port allows control from an RC transmitter.
- PC-style joystick control port.
- 2 Line x 16 character LCD display.
- 16-key keypad.
- Sound effects and rudimentary speech (optional speech synthesizer).
- Sound recording and playback.
- Expansion port allows unlimited possibilities.
- Safe, low voltage system.

Sensors

- 8 whiskers surround the base.
- 2 degree electronic compass.
- Sonar range finder can detect objects and their distance.
- Passive Infrared Motion Detector (PIR) detects people and animals.
- 4 light level sensors detect direction and intensity of light.
- Digital temperature sensor.
- Tilt sensors detect inclines in all directions.
- Water sensor detects puddles.
- Sound can be detected and stored.
- Motor speed and distance using optical encoders.
- Battery voltage can be monitored.
- Infrared detector can receive communications from remote control.
- Infrared emitters can communicate with other Trilobots.

Uses

- Robotics education.
- Artificial life experiments.
- AI development.
- Navigation research.
- Automatic guided vehicle simulation.
- Telepresence.
- Security.
- Robot contests.
- Publicity.
- Science projects.
- Fun! Fun! Fun!

Price

TRILOBOT

Mobile Research Robot

\$1,900.00

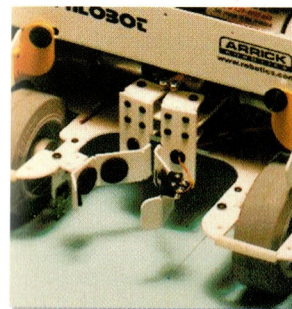
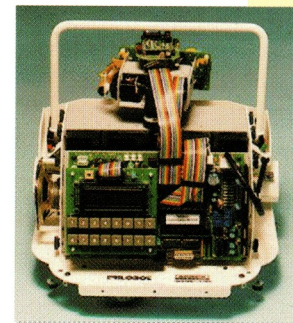
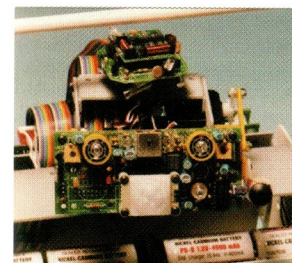
Flexible, Programmable, Expandable

Expansion

An expansion connector is provided to allow the user to add many special devices including a GPS (Global Positioning System), speech synthesizer, embedded PC, smoke detector, video transmitter, etc.

The expansion port offers:

- 8 digital I/O signals.
- 1 analog input signal (expandable to 8 with a chip).
- Serial I/O port (RS-232 and TTL levels).
- +5 and +12 volt power supplies.
- Access to 2 main processor I/O pins.
- 4 RC servo signals. (Standard 1-2ms pulse width)
- Access to coprocessor network bus.
- Audio amplifier.
- Video signal from user-supplied head camera.
- User defined signals.
- Standard 40 pin flat ribbon cable.



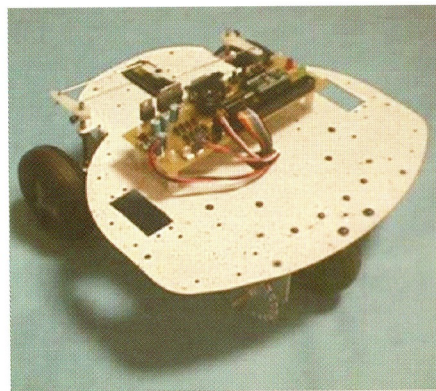
Options

- Duracell battery set.
- Speech synthesizer.
- Radio data link.
- Tethered power supply.

See Our Web Site for Details!

P.O. Box 1574 Hurst, TX 76053 USA
 Ph: (817) 571-4528 Fax: (817) 571-2317
 Web: <http://www.robotics.com>
 E-mail: info@robotics.com

Go Beyond Plastic Construction Toys



ARobot (pronounced "A robot") is a computer controlled mobile robot designed for Experimenters and Educators. Ages 16 and up can enjoy unlimited experimentation by programming the on-board Basic Stamp II control computer. Learn and use concepts such as computer programming, motion control, sensor reading, path planning, object avoidance, and more. Easily assembled in a few hours using common hand tools (no soldering required). Connect ARobot to your personal computer for programming and begin your adventure.

Basic Stamp II

The Basic Stamp II is a small, self-contained computer controller manufactured by Parallax Inc. This easy-to-use system is programmed using a Basic-like language called PBasic. Programs are written on an IBM-style PC then downloaded to the Basic Stamp II for execution. Large libraries of programs can be created and saved. ARobot's

controller board accepts the Basic Stamp II (purchased separately) which controls motors, LEDs, buzzer, and other devices. The Parallax Web site provides complete information about the Basic Stamp II including the programming manual. You can purchase the Basic Stamp II from us at a discount and save time.

Features

- Rugged aluminum frame (no plastic or wood).
- Dual front whisker sensors.
- Controllable Red and Green LEDs.
- Sound output transducer.
- Two user defined push button switches.
- Rear wheel steering servo motor.
- Front wheel DC gear drive motor.
- Optical wheel encoder for distance measurement.
- 3 User defined RC servo control ports.
- Serial communications port.
- Expansion connector.
- Socket to accept a Basic Stamp II controller.
- Dimensions: 10" x 10", 5" tall, 2-1/4 lbs.
- Runs on 8 AA-cell batteries for 5 hours or more.

Uses

- Robotics education.
- Artificial life experiments.
- Science projects.
- Navigation research.
- Maze solving.
- Security.
- Robot contests.
- Publicity.
- Fun! Fun! Fun!

Specifications

- Frame: Laser cut .062 aluminum.
- Configuration: 3-wheel, front wheel drive, rear wheel steer.
- Dimensions: 10" x 10", 5" tall, 2-1/4 lbs.
- Payload capacity: 1 lbs.
- Wheel size: 3.25" diameter.
- Drive Motor: 12volt DC gear motor, 74 full load RPM.
- Quality machined wheel coupling and bearings.
- Optical wheel encoder for distance measurement, 20 counts per revolution, 2 counts per inch of travel.
- Motor driver: H bridge - 1 amp max.
- Speed control: Pulse Width Modulation.
- Controller PCB size: 2.1" x 6"
- Steering Motor: Standard size RC servo motor.
- Power source: 8-AA cells in removable pack.
- Run time: 5 hours or more.
- Current draw: 50ma at standstill, 200ma with motor running.
- Coprocessor: PIC16F84 for motor control.
- Expansion connector - 40 pin (2x20) IDC .1 centers.
- Schematic and User Guide on line.
- Expansion Connector provides access to all Basic Stamp I/O pins plus user defined pins.

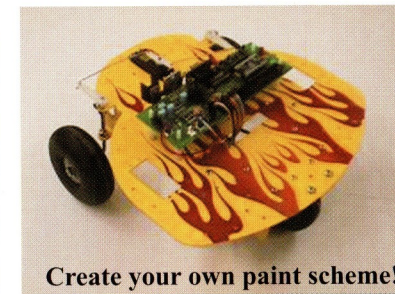
Prices

ARobot	Experimenter Robot	\$235.00
BSII	Basic Stamp II Controller	\$49.00
BSIIBOOK	Basic Stamp Programming Book	\$34.00

Perfect for the Classroom and Hobby Shop

What You'll Get

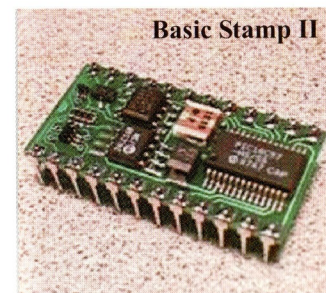
- Quality aluminum robot body and frame components.
- Controller circuit board - completely assembled.
- Programming tools and example programs.
- Wheels, drive motors, steering motors, encoder, cables.
- Construction and user guide.
- Technical support via web site and email.
- On-line projects for expansion including:
 - ◆ Sonar ◆ Headlight
 - ◆ Speech ◆ Light sensor
 - ◆ Robot arm, and more.....



Create your own paint scheme!

What You'll Need

- Common handtools - screwdriver and pliers.
- Your choice of spray paint (if desired).
- IBM-style personal computer running DOS or Windows (any version) with an unused serial port (9 pin connector).
- Common understanding of computer usage and a moderate understanding of Basic programming or a willingness to learn.
- 8 AA batteries. (over 5 hours of continuous run time).
- Basic Stamp II programming information -available free on the net, or you can purchase a book.
- Internet connection for getting the latest information.
- A never-ending desire to experiment and play with robots!



Expansion

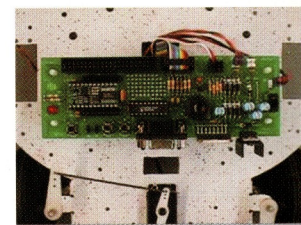
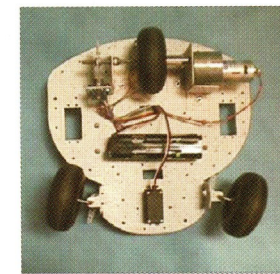
ARobot's controller board has the ability to control 3 additional RC (Remote Control) servo motors which are commonly available at hobby stores for less than \$20 each. These motors can be used to create a small robot arm or a moving head.

The controller board also provides a connector to power a small DC motor like the one used as the drive motor. This connector can also be used to control other high-power devices such as a light or horn.

An expansion connector is provided to allow the user to add many special devices. Access to all of the Basic Stamp's I/O signals is provided and unused pins can be wired as needed.

Additional circuit boards can be stacked on top of ARobot's main controller board. Mounting holes and dimensions are the same as the prototype boards and breadboards found at Radio Shack. This makes expansion easier and cheaper.

See our web site for expansion projects such as sonar range finder, light sensor, headlight, speech, robot arm, and more.



Download the User Guide from Our Web Site!

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