



# AmigoBot

The AmigoBot is a small, cost-effective differential-drive robot for education and research. The AmigoBot comes complete and assembled with wheel encoders, battery, charger, piezo buzzer, omnidirectional SONAR array, microcontroller with AmigoOS firmware, and Pioneer SDK advanced mobile robotics software development package. The robot can be operated from any PC or laptop via a tether, or wirelessly with the optional Ethernet to serial radio. AmigoBot's high-impact plastic shell and aluminum frame provide a rugged platform that will last for many years in a classroom or laboratory environment.

## Product Features and Benefits

- **Easy to Use** - Comes fully assembled and integrated with its accessory packages.
- **Reliable** - Construction is durable and rugged. Easily handles the small gaps, minor bumping, jarring, and obstacles that hinder other robotic platforms.
- **Technical Support** - AmigoBot's software and hardware comes fully documented with additional help available through our product support team.
- **Pioneer Software Development Kit** - Platform includes Pioneer SDK, a complete set of robotics applications and libraries to accelerate the development of robotics projects. Pioneer Software runs on an external PC and enables the following functions:
  - *Drive the AmigoBot* with a keyboard or joystick
  - *Autonomously path planning* and navigation
  - *Display a map* of SONAR readings
  - *Localize using SONAR*
  - *Communicate sensor* and control information, including SONAR, motor encoder, motor controls, user I/O, and battery charge data
  - *Run C/C++ programs*
  - *Simulate offline behaviors* with MobileSim

## Specifications

### Construction

Envelope Dimensions: 33 cm x 28 cm x 15 cm  
 Body: High Impact Plastic Shell  
 Frame: Aluminum  
 Tires: Rubber

### Operation

Robot Weight: 3.6 kg  
 Maximum Payload: 1 kg

### Differential Drive Movement

Turn Radius: 0 cm  
 Swing Radius: 16.5 cm  
 Max. Forward/Backward Speed: 1 m/s  
 Rotation Speed: 100°/s  
 Max. Traversable Step: 1.5 cm  
 Max. Traversable Grade: 5%  
 Traversable Terrain: Indoor, wheelchair accessible

### Power

Run Time: 2-3 hours  
 Charge Time: 6 hours (standard) or  
 2 hrs (optional high-capacity charger)  
 Available Voltage Supplies: 3.3 V, 5 V, or 12 V  
 Battery Capacity: 2.1 Ah  
 Battery Chemistry: lead acid

### Sensors

SONAR: 1 each side  
 4 forward  
 2 rear  
 Position Encoders (one each motor):  
 39,000 ticks/wheel revolution

### Microcontroller

Processor: 44 MHz Renesas SH2-7144  
 Analog-to-digital: 3 x 1024-bit with  
 isolated analog-ground  
 Comm port 2 x RS-232  
 Wireless Ethernet-to-Serial device (Optional)  
 Gyroscope Heading Correction device (Optional)

### Indicators

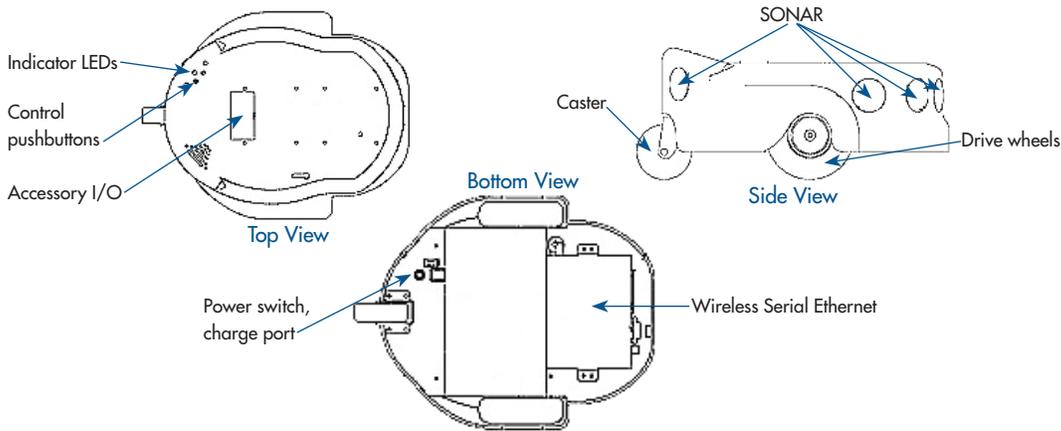
Robot/accessories power  
 System power/battery recharge  
 Piezo Speaker

### Controls

Reset  
 Motors Test

# AmigoBot

## Diagram



## Pioneer SDK included with AmigoBot

**ARIA** provides a framework for controlling and receiving data from all MobileRobots platforms, as well as most accessories. Includes open source infrastructures and utilities useful for writing robot control software, support for network sockets, and an extensible framework for client-server network programming.

**MobileSim** open-source simulator which includes all MobileRobots platforms and many accessories.

**MobileEyes** graphical user interface client for remote operation and monitoring of the robot.

**Mapper 3 Basic** tool for creating and editing map files for use with ARIA, MobileSim, and navigation software.

**SONARNL** C++ library performs basic localization within a map using the robot's built-in SONAR. Along with Mapper 3 Basic and MobileEyes, SONARNL allows any robot platform with SONAR to automatically navigate within a known indoor office, school, or lab environment.

## Accessory Support Software - bundled with purchase of robotic accessory

**ACTS Color Tracking System:** Software application for use with surveillance camera which read images from and tracks the positions and sizes of multiple color regions. Information can be incorporated into your own software via ARIA.



## More Information:

See our website [www.mobilerobots.com](http://www.mobilerobots.com) for a full range of supported accessories or contact our sales department to discuss your application.

## Configurations and Accessories



AmigoBot with Wireless Serial Ethernet for remote operations



Amigo Fingers (Spring-loaded passive Grippers)



Manual Tilt Surveillance Camera (Includes wireless transmitter/receiver and PCI frame grabber)



Amigo Joystick



Class Packs

(Receive discounts on purchases of 5 or 10 AmigoBots with Serial Ethernet)

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