WHITE BOX ROBOTICS™

Dream in White

914 PC-BOT

Robotics Development Platform
Extreme version

914 PC-BOT

Robotics Development Platform - Extreme version

914 PC-BOT Exclusive Offer

This high quality, research and development platform for PC-based, open architecture robot is available on a special, limited time basis.

White Box Robotics is committed to building a new, highly innovative class of robots that leverages the universal and open standards of the PC to build low-cost, highly flexible robotic applications.

This PC-BOT will fuel a new wave of exciting robotics research and development that enables and encourages everyone to participate.

- Open standards PC-based platform provides common baseline for research, peer review and code-sharing.
- Well known and documented “white box” PC architecture
- Industry standard interfaces (USB, Serial, IEEE1394)
- Thousands of inexpensive, off-the-shelf parts.
- Driver support for Linux or Windows
- PC price and reliability
- Ideal baseline platform for robot education and competitions

Physical Specifications*

- Height: 53.4 cm Weight: 25 kg
- Payload: Up to 5 kg
- Maximum Climb Slope: 8 degrees
- Differential drive train with independent front suspension, patented self-cleaning roller ball casters and 2 DC stepper motors
- Torso unit containing: 2 foldable side bays (power supply housing/ bay 1, main system board/ bay 2), 8 x 5.25" bays (5 available to user, 1 used for sensors, 1 used for 5.25” speaker and 1 used for Slim DVD/CD-ROM and SATA HDD).
- USB Machine Management Module (M3) - motor controller and I/O board interface
- One I/O board with 8 analog inputs for IR or other sensors, 8 digital outputs, 8 digital inputs and 2 USB ports sourced from Mini-ITX.
- Two M2-ATX power supplies with automatic battery monitoring and auto-shutoff
- Head assembly containing one web camera.
- Sensor array containing: 8 fixed and factory installed IR sensors (5 sensors installed in bumper and 3 sensors installed in 5.25" bay).
- Injection moulded plastic body panels
- iGoLogic i3899 Mini-ITX Motherboard
- Intel Core 2 DUO 2GHz
- 1 Gbyte of DDR2 RAM
- 80 GB 2.5" SATA Hard drive
- Slim-style DVD-ROM/CD-RW Combo Drive
- 5.25" computer bay speakers
- 2 x 12V 9Ah (45W) Lead Acid Battery SONEIL 12V Intelligent Battery Charger (3A)
- Universal INPUT
- 802.11g wireless USB adapter
- Windows XP Home Operating System (XP Pro available upon request) and .NET components

*Specifications may change without notice.

High Quality Design and Engineering

Gone are the days of ‘One-Off’, low quality, unattractive, unreliable robotic research platforms. This robot has been designed with both beauty and functionality in mind. Internal hardware is fully enclosed for protection yet still easily accesible through fold down bays and quarter-turn fasterners. Body and head plastics pull off easily without requiring any tools by using ball sockets. The robot is assembled by skilled technical workers, passing in-depth quality control and assurance and completely tested before it leaves the facility.

WHITE BOX ROBOTICS™

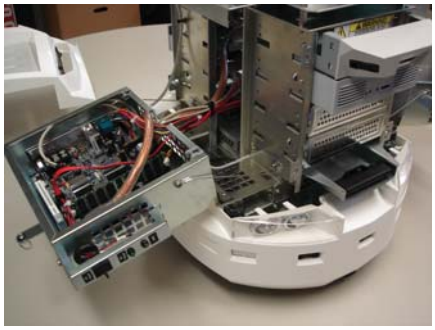
Dream in White

Visit us at www.whiteboxrobotics.com or contact us at info@whiteboxrobotics.com

914 PC-BOT

Expandable Hardware

As this robot is designed to follow PC architecture, modifications, improvements and upgrades can be done completely by a user with good PC skills. 5.25" bay accessories can be added, HDD and RAM size can be increased. Mini-ITX form factor boards will all fit within the computer bay allowing for a variety of inputs and outputs.



Need a Faster Processor?

A user can easily switch Intel based processors if greater speed and power is required.

Need a Different Mini-ITX?

Due to the use of M2-ATX Power Supplies, the motherboard chosen must be one with 20 pin (or 20 pin compatible) ATX power connector and not require more than 100W to run.

* Some minor modifications may be required depending on processor/Mini-ITX chosen.

Need More I/O?

Add extra I/O boards through USB connectors such as:

Phidget Interface Kit
8 analog inputs,
8 digital inputs,
8 digital outputs,
and a 2 port USB hub.

Through extra I/O boards, more sensors could be added as well as long range analog ultrasonic sensors and environmental sensors.

Examples of other environmental sensors includes: humidity sensor, light sensor, magnetic sensor, pressure sensor, temperature sensor, vibration sensor and motion sensor.

Need Advanced Sensors?

Universities have already successfully integrated a laser scanner to give the robot even greater detection range.

Through USB or IEEE 1394 ports (optional), the robot can also use a variety of advanced cameras for visualization and vision processing applications and research

The above photo was taken at the university during an experiment on the cooperative navigation.

WHITE BOX ROBOTICS™

Dream in White

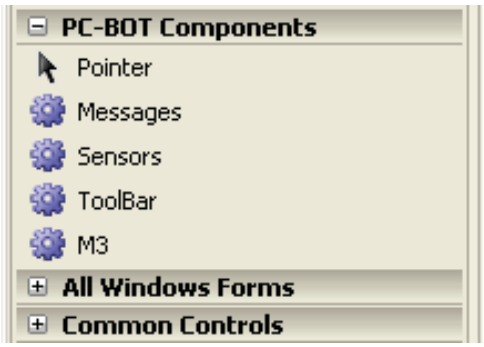
Visit us at www.whiteboxrobotics.com or contact us at info@whiteboxrobotics.com

914 PC-BOT

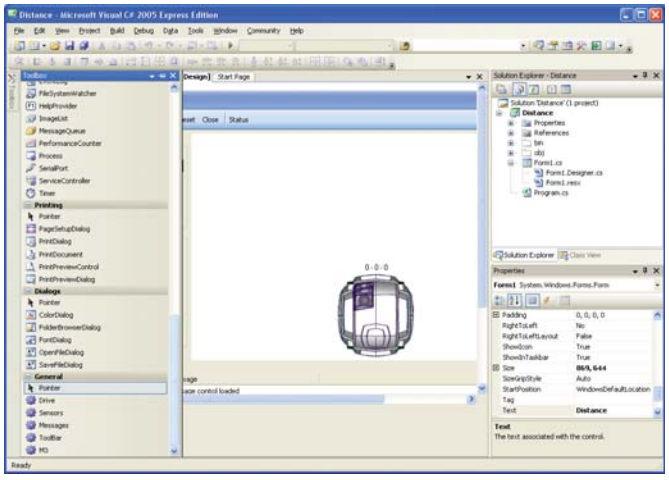
Software Capabilities

Industry-leading development environment using Visual Studio and the PC-BOT .NET components

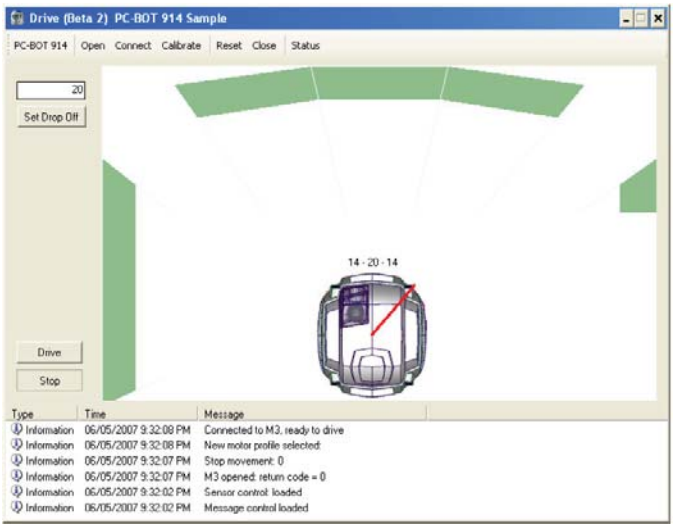
A Visual Studio Developer can drag and drop these components in to any Windows forms project and write their code in any of the .NET supported languages (Visual Basic, C#, J#, C++)



Visual Studio Express software can be installed free of charge from the Microsoft website:
http://msdn.microsoft.com/vstudio/express/default.aspx



Included projects and sample applications with the PC-BOT .NET components:



Distance – Used to move the robot set distances and rotate set degrees
Drive – Used to drive the robot by clicking and dragging with the mouse on the robot.
Roam – Used to demonstrate the automatic avoid movement using the IR sensors.

Simple to advanced applications can be created using Microsoft Visual Studio Express.

The Toolbox
Visual Studio Express toolbox offers a huge number of components that can be used to build your applications and create GUI interfaces for controlling your robot.

Beginner Developer Learning Center - An online centralized learning environment specifically targeted to beginning programmers. Here you'll find a rich array of learning content that starts with the very basics, and guides you through step-by-step to becoming a full-fledged developer!
http://msdn.microsoft.com/vstudio/express/beginner/

WHITE BOX ROBOTICS™
Dream in White

Visit us at www.whiteboxrobotics.com or contact us at info@whiteboxrobotics.com

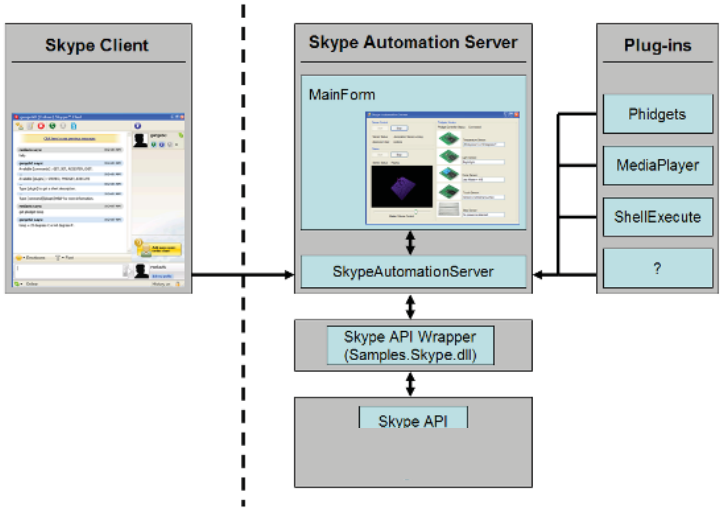
914 PC-BOT

Software Capabilities

Ready for more advanced applications?

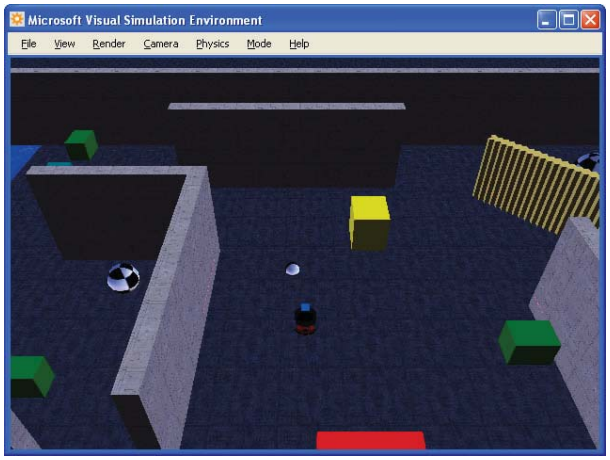
Even more advanced .NET projects (**not included**) can be downloaded from the Microsoft community sites and integrated into the robot software to ever increase the functionality such as:
(http://blogs.msdn.com/coding4fun/archive/tags/home+automation/default.aspx)

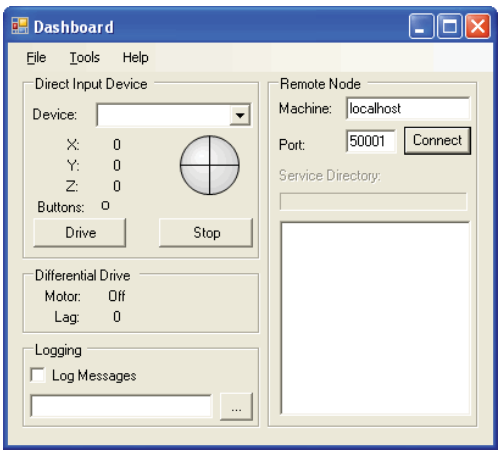
The **Skype Home Automation** project - Which demonstrates how you could use an instant messaging application (Skype) to communicate with a home server (PC-BOT) for the purposes of automation and monitoring.



Microsoft
ROBOTICS STUDIO

With Microsoft Robotics Studio, robotics applications can be developed using a selection of programming languages, including those in Microsoft Visual Studio® and Microsoft Visual Studio Express (C# and VB.NET).
MRS can be downloaded from: http://msdn2.microsoft.com/en-us/robotics/default.aspx





WHITE BOX ROBOTICS™
Dream in White

Visit us at www.whiteboxrobotics.com or contact us at info@whiteboxrobotics.com

WHITE BOX ROBOTICS

Dream in White

White Box Robotics Headquarters:
Research Road, Bldg. U62, Unit 5
NRC Uplands Campus
Ottawa International Airport
Ottawa, Ontario, Canada K1V 9B4
Phone: 613-739-BOTS (2687)
Fax: 613-230-5814