

- *High mobility 4x4 platform*
- *Modular and open architecture*
- *Fully controllable using I2c or USB*
- *Fully customizable by adding custom deck's : Xpe default*



Multi-purpose robot

Wifibot Lab is suited for those who want an affordable mobile platform for developing and learning robotics. The base system is composed by a four wheel drive platform controllable using I2C or USB bus. You can add our custom deck's which can include different kind of CPU's. We propose by default AMD geode SBC running Windows Xpe on a 2G compact flash or LS2 UBNT Linux WIFI router. You can connect to Xpe, devices such as mini-pci WIFI (default b/g card), IP camera (MJPEG or MPEG), USB Webcam, GPS, RS232 robotic arm or different kind of custom electronic boards.

For controlling this robot, several GUI and API are available for PDA and PC. In a few month, Microsoft Robotics Studio services and a special version of RTMAPS from Intempora will be available.



www.wifibot.com

Basic Platform Features

Sensors: 2x Hall effect encoders
Battery level

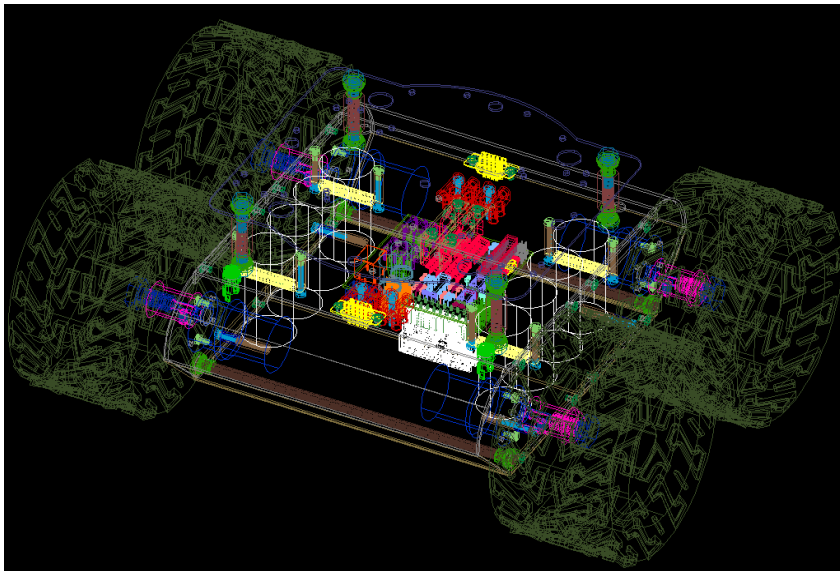
Speed Control: 2 X DSPIC 30f2010
(PID)

Motors: 4x motors 12V
50:1
8.87Kg/cm
150 rpm

Dimensions: Length : 30 cm
Width : 35 cm
Height : 15 cm
Weight : 3.8 Kg

Batteries: 9.6V NiMh
10000 mAh
Charger included

Control Bus: I2C / USB



Wifibot LAB

IP CAMERA Custom Sensors



Robotic Arm



WEBCAM



WIFI



User



GPS



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LAN

USB

RS232



 Windows Embedded



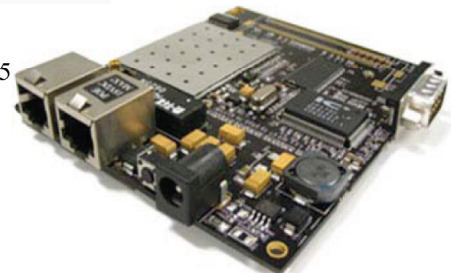
AMD® Geode™
LX800
low power
Embedded SBC

OR

UBIQUITI
LiteStation2 or 5
2.4 or 5 GHZ



UBIQUITI
NETWORKS



**SBC Industrial PC
XPE (Linux possible)**

Free C/C++ API
or (future option)
Microsoft Robotics Studio
or (future option)
RTMAPS (C++)

UBNT LS2

Free C/C++ API
Free Wifi ubnt Linux SDK

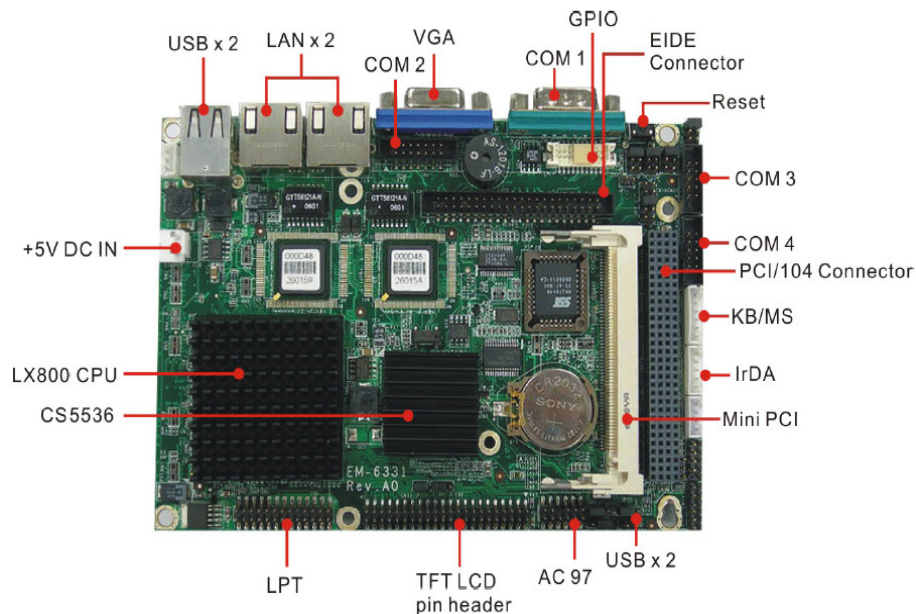


USB



**USB/I2C Mobil Robot
Generic Platform**

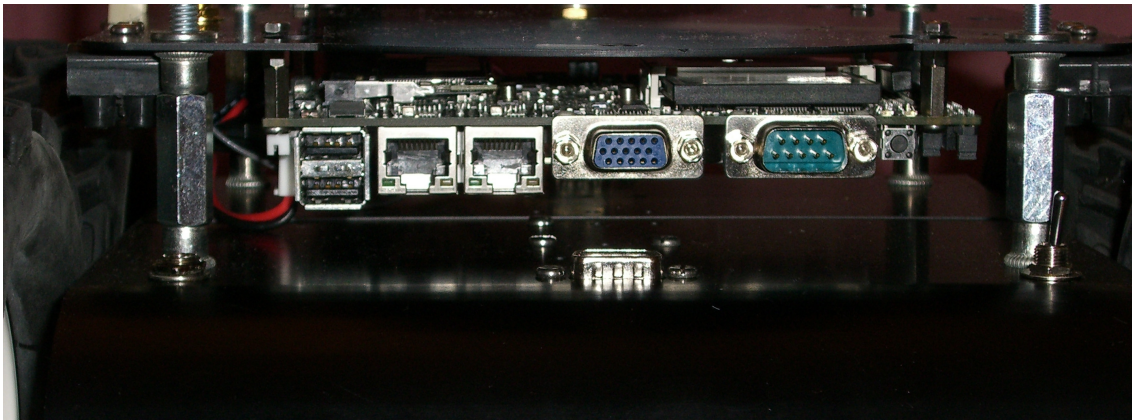




Specifications

General Functions

CPU	AMD Geode LX800 processor
BIOS	Insyde® 512KB Flash BIOS
Chipset	AMD CS5536
I/O Chipset	Winbond 83627HG
Memory	One 200-pin DDR SO-DIMM socket support up to 1GB DDR 333/400 Memory
Enhanced IDE	Support one Ultra ATA-66 IDE
S-ATA interface (Optional)	Internal Connector to link to one optional S-ATA adaptor board (AW-R054) for two S-ATA Devices
Parallel port	Support SPP/ECP/EPP
Serial port	Three RS-232 and one RS-232/422/485 serial ports.
IR interface	Support one IrDA Tx/Rx header
KB/Mouse connector	keyboard/ mouse pin-header
USB connectors	Support four USB 2.0 ports(two on external Connector, two on Pin-header)
Battery	Lithium battery for data retention up to 10 years(in normal condition)
Watchdog Timer	Software programmable, 1-255 level
PCI Bus Expansion	One PCI/104 connector & MiniPCI connector

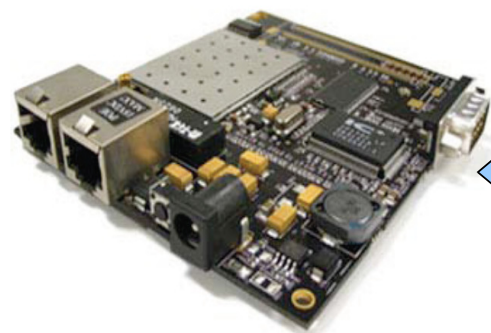


Display type	Simultaneous supports CRT and 24-bit TFT LCD
Resolution	CRT Resolution support up to 1920 x 1440 @ 32bpp or 1660 x1200 @ 32bpp CRT & LCD simultaneous: up to 1024 x 768 @ 18bpp (60Hz)
LVDS (Optional)	Optional 18/24-bit LVDS Adaptor available
Ethernet Interface	R-053A for 24-bit LVDS; R-053B for 18-bit LVDS
Chipset	Dual Intel 82551ER or Realtek RTL8139CL+
Ethernet interface	PCI 100/10 Mbps Ethernet controller
SSD Interface	One 50-pin CompactFlash™ socket
Sound Adaptor (optional R-031)	
Chipset	Optional AC 97 codec
Audio controller	SoundBlaster Pro Hardware andDirect Sound Ready AC97 Digital Audio
Audio interface	Mic in and Speaker out
Software Driver	Supports for Windows 95, Windows 98 and windows NT
Mechanical and Environmental	
Power supply voltage	VCC (4.75V to 5.25V),
Max. power requirements	+5 V @2.4A,
Operating temperature	32 to 140°F (0 to 60°C)
Board size	5.7"(L) x 4"(W) (145mm x 102mm)
Weight	0.6 lb. (0.3 Kg) Net Weight

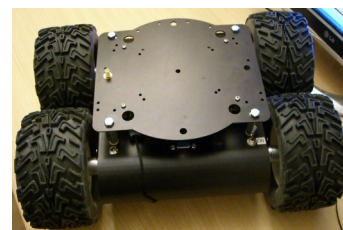


LiteStation2

Hi-Performance, Open Software, 2.4GHz Wireless Platform



RS232 to
I2C
converter



Wifibot Lab
(USB / I2C)

LiteStation2

The LiteStation platform was designed for high-performance outdoor and industrial OEM applications. It features an industry best radio design offering hi-power, great receive sensitivity, and capable of multi-km wireless links. The system was designed for high temperature operation and features industrial grade components as well as a integrated heatsink beneath the board. The LiteStation ships with basic bridging and routing software, as well as publicly available software development materials needed for custom OEM use.

APPLICATIONS

MultiPoint CPE

Mesh/Mobility CPE

Bridging





SYSTEM INFORMATION

Processor Specs	Atheros AR5312 SOC, MIPS 4KC, 220MHz
Memory Information	16MB SDRAM, 4MB Parallel Flash
Serial Interface	On board RS232 with DB9 connector
Networking Interface	2 X 10/100 BASE-TX (Cat. 5, RJ-45) Ethernet Interface

REGULATORY INFORMATION

Wireless Modular Approvals	FCC Part 15.247, IC RS210
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RADIO OPERATING FREQUENCY 2412-2462 MHz (2312-2732 MHz*)

TX SPECIFICATIONS				RX SPECIFICATIONS			
	DataRate	TX Power	Tolerance		DataRate	Sensitivity	Tolerance
802.11b	1Mbps	26 dBm	+/-1dB	802.11b	1Mbps	-97 dBm	+/-1dB
	2Mbps	26 dBm	+/-1dB		2Mbps	-96 dBm	+/-1dB
	5.5Mbps	26 dBm	+/-1dB		5.5Mbps	-95 dBm	+/-1dB
	11Mbps	26 dBm	+/-1dB		11Mbps	-92 dBm	+/-1dB
802.11g OFDM	6Mbps	26 dBm	+/-1dB	802.11g OFDM	6Mbps	-94 dBm	+/-1dB
	9Mbps	26 dBm	+/-1dB		9Mbps	-93 dBm	+/-1dB
	12Mbps	26 dBm	+/-1dB		12Mbps	-91 dBm	+/-1dB
	18Mbps	26 dBm	+/-1dB		18Mbps	-90 dBm	+/-1dB
	24Mbps	26 dBm	+/-1dB		24Mbps	-86 dBm	+/-1dB
	36Mbps	24 dBm	+/-1dB		36Mbps	-83 dBm	+/-1dB
	48Mbps	23 dBm	+/-1dB		48Mbps	-77 dBm	+/-1dB
	54Mbps	22 dBm	+/-1dB		54Mbps	-74 dBm	+/-1dB

ADJUSTABLE CHANNEL SIZE SUPPORT (Increase Channel Capacity or Increase Throughput)

5MHz	10MHz	20MHz	40MHz (Turbo)
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RANGE PERFORMANCE

Outdoor (Antenna Dependent):	Over 50km
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PHYSICAL / ELECTRICAL / ENVIRONMENTAL

Dimensions	18 in. length x 13 in. height x 2in. Width
Weight	3.7 lbs
Max Power Consumption	6.5 Watts
Power Method	Passive Power over Ethernet (pairs 4,5+; 7,8 return)
DC Voltage Rating	5-24V (18V max recommended)
ESD/EMP Protection	Transient Voltage Suppression at POE port
Operating Temperature	-40C to 85C (System PCB optimized for hi-temp)

SOFTWARE INFORMATION

Modes	Station, Station WDS, AP Bridge
Tested Compatibility	Mikrotik RouterOS, StarOS, Ikarus, MADWIFI
Services	SNMP,DHCP,NAT,
Utilities	Antenna Alignment tool, Discover Utility
Advanced	ACK Timeout adjust, CTS/RTS adjust
Operating Temperature	-40C to 85C (System PCB optimized for hi-temp)

Development Option

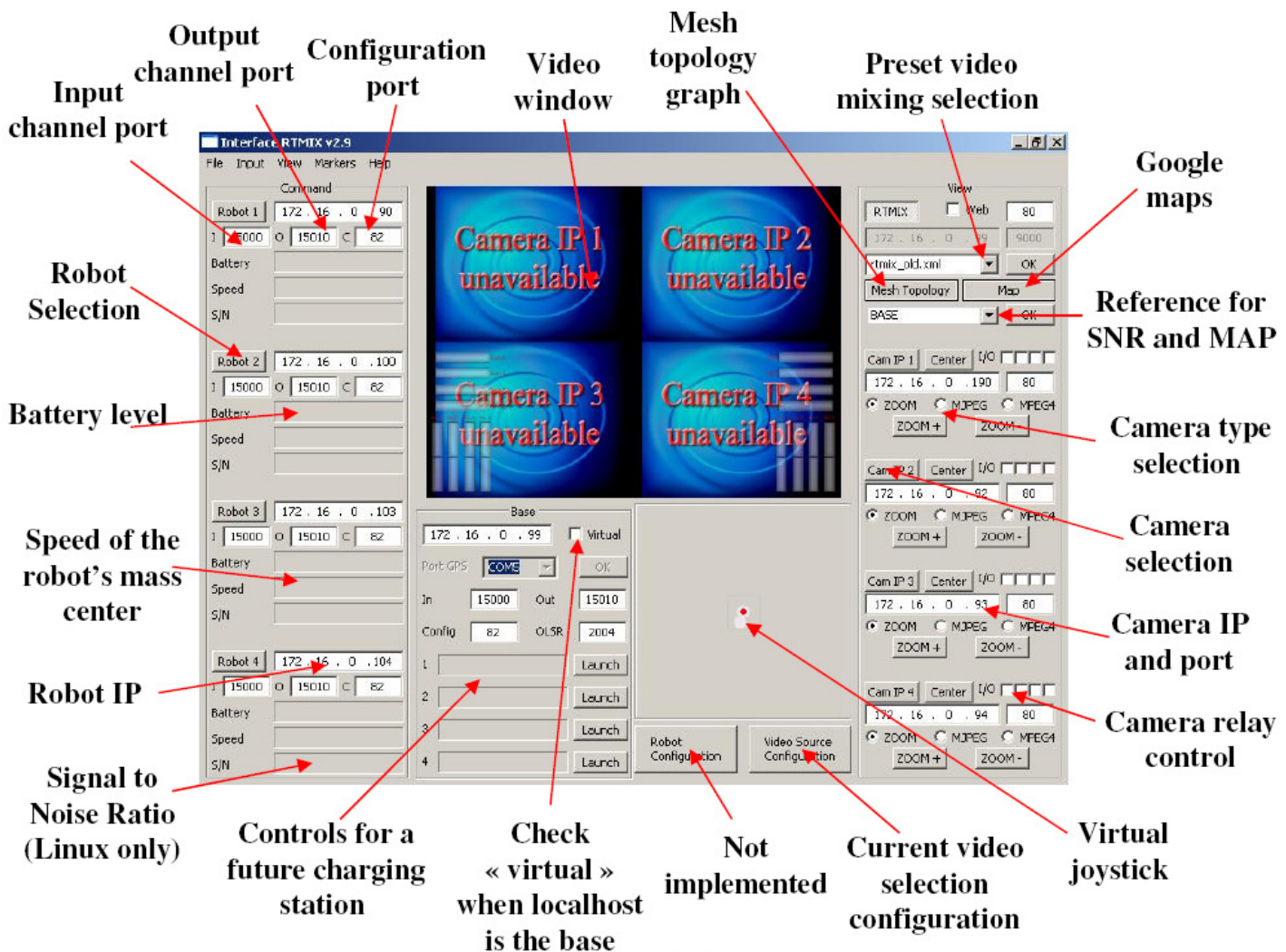
Ships with LiteStation system board, JTAG / Serial interface connectors, documentation, and development software



RTMIX multi-robot interface (UDP)

Features:

- The RTMIX multi-robot interface allows the user to control a team of up to four robots.
- The interface is best viewed with a 1024x768 resolution.
- Platform related controls are located on the left while visual related ones are located on the right.
- Before operation the user has to make sure all IP addresses and ports are correctly set.
- Selected robots can be controlled using the virtual joystick, a joystick or a wiimote, selecting more than one robot at a time will have as a result having all of them receiving the same command.
- Cameras can be selected individually or blended in one image with RTMIX. Preset mixing layouts can be selected and new ones added thanks to the "video source configuration" webpage.
- Certain functionalities need a reference which can be selected with a menu located just under the Mesh and Map buttons.
- Certain types of supported cameras have incorporated relays which are set with the I/O checkbox.
- The "base" can be either an external gateway or the control computer itself (check "virtual" for this).
- The Map button needs to have an active internet connection and will show the robot's and the base position on a Google Maps webpage provided those are equipped with a GPS.



The simple control software (TCP) :

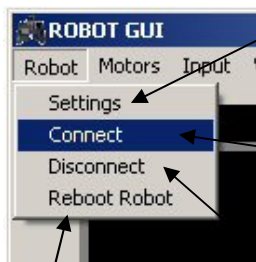


The control software:

The control software can be found in the CDROM in
..\Software\control software

- Install if necessary the **Video Decoder** present in the same folder.
- Launch the **WifibotGUI** program.
- Click on **Robot** then **Settings**. The **Robot Settings** window appears.
- Set the **Control Server IP** and the **Control Server Port** which by default is **15000**.
- Set the **Camera IP** and the **Camera Port** which for the image is by default **80**.
- Select the proper **Camera Type**.
- Click on **Video**, then select **VideoOn**. The image from the camera will appear.
- Click on **Robot** then **Connect**.
- Click on **Input** then select **Joystick** or **Virtual_joy**. The robot can now be operated.

The menu options:

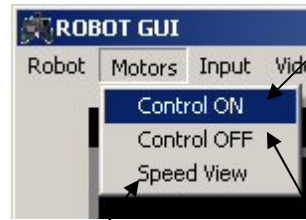


Settings: IP settings of the Control Server and the Camera.

Connect: Starts the communication with the Control Server.

Disconnect: Stops the communication with the Control Server.

Reboot: Reboots the robot's CPU.



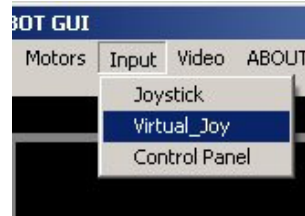
Motor Control ON:

Activates the speed control, Input_Left and Input_Right set on the dialog will be applied.

Speed View: Plots in real time the speed signal from the code wheels.

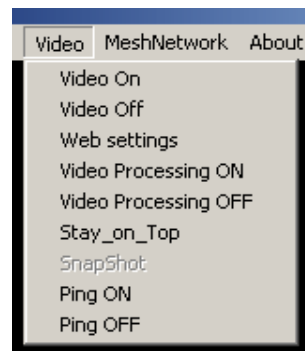
Motor Control OFF:

Deactivates the speed control.



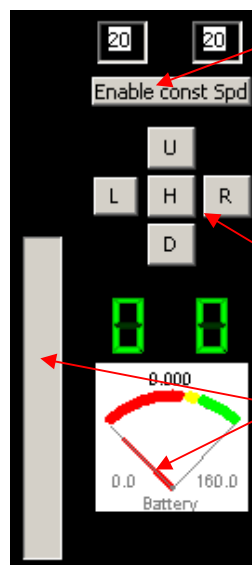
Input Selections

(control panel for calibrating the joystick)



Video selections:

Allows to configure and control some options of the camera.



Current input: shows the current input or allows to set it manually with keyboard.

Pan-Tilt camera control:

The red button takes the camera to the default position. You can click on the image too for moving the camera.

Sensor feedback: shows the data retrieved from the range sensors, the battery level and the speed of the robot.