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

Wifibot LAB

Multi-purpose robot

Wifibot Lab is suited for those who wants 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 witch 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

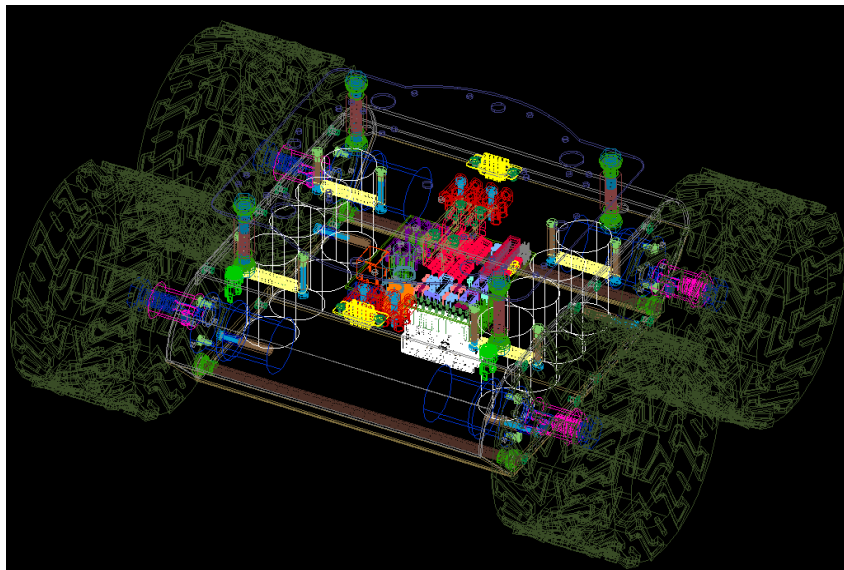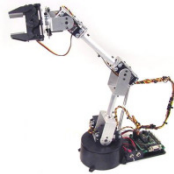|	
Sensors:	2x Hall effect encoders Battery level
Speed Control:	2 X DSPIC 30f2010 (PID)
Motors:	4x motors 12V 50:1 8.87Kg/cm 150 rpm
Dimensions:	Length : 30 cm Width : 35 cm Height : 15 cm Weight : 3.8 Kg
Batteries:	9.6V NiMh 10000 mAH Charger included
Control Bus:	I2C / USB

WifibOT LAB

IP CAMERA **Custom Sensors** **Robotic Arm** **WEBCAM** **WIFI** **User** **GPS**

...

LAN USB RS232 I²C BUS

Windows Embedded

OR

Linux Embedded

UBIQUITI NETWORKS

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

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

**TS7400 Arm9 Board
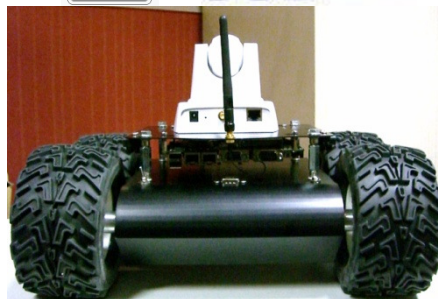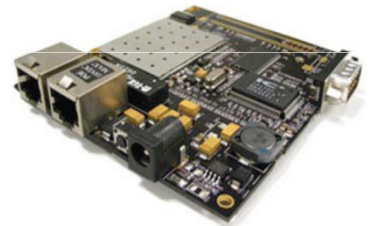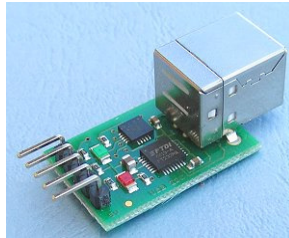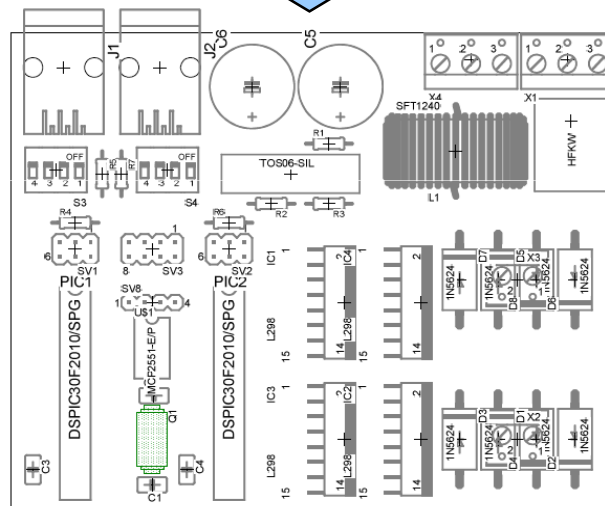Linux**
Free C/C++ API

UBNT LS2
Free C/C++ API
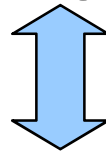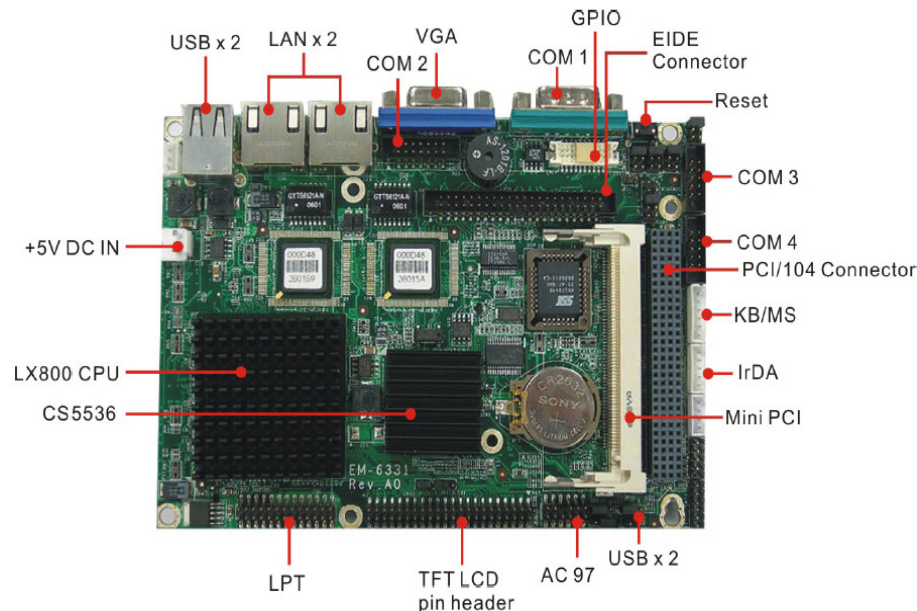Free Wifi ubnt Linux SDK

**Linux WIFI board with
GUI
(OPTION)**

I²C BUS USB

**USB/I2C Mobil Robot
Generic Platform**

WiFi

USB -> I2C
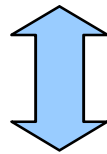
DSPIC Motor Board

Motor + Hall Coders

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
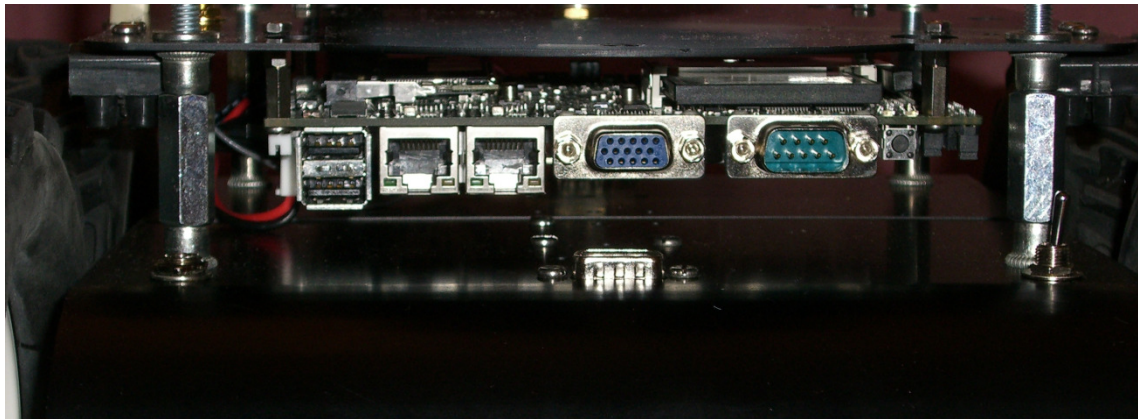
Display type	Simultaneous supports CRT and 24-bit TFT LCD
Resolution	CRT Resolution support up to 1920 x 1440 @ 32bpp or 1660 x1200 @ 32bpp CRT & LCD simultaneous: up to 1024 x 768 @ 18bpp (60Hz)
LVDS (Optional)	Optional 18/24-bit LVDS Adaptor available
Ethernet Interface	R-053A for 24-bit LVDS; R-053B 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
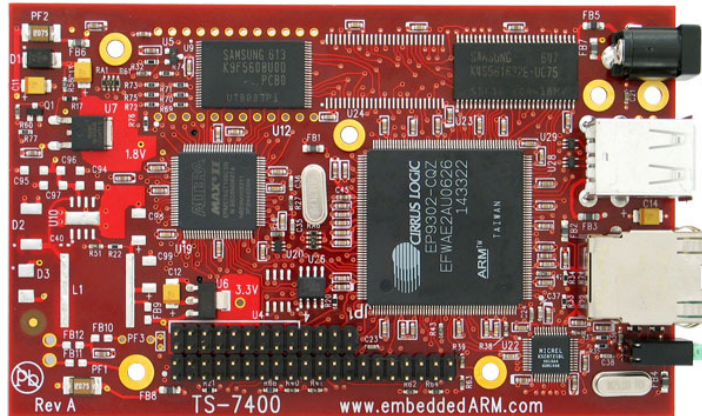
The TS-7400 is a compact computer module (System-On- Module) based upon the Cirrus EP9302 ARM9 CPU, which provides a standard set of on-board peripherals. The EP9302 features an advanced ARM920T 200 MHz processor design with MMU. The TS-7400 includes a standard SD Card socket and a 40-pin header that brings out many interfaces, including audio, GPIO and ADC.

Hardware Description:

The TS-7400 is a small embedded computer module (System on Module) that is designed to provide extreme performace for applications which demand high reliability, fast bootup/startup and connectivity at low cost and low power, such as point-of-sales (PoS), vending machines, data acquisition units, data recorder modules, etc. Additional TS-7400 specifications include:

* 100% soldered-on components
* Fanless -40° to +70° C with CPU 200Mhz
* Up to +85° C with CPU speed under 166Mhz
* Board dimensions are 2.9" x 4.7"
* Power requirements are 5V DC @ 350mA
* Standard RoHS Compliant

The TS-7400 enables more control and access to the EP9302's core peripherals.
The 40-pin header provides 3 TTL-level serial ports, 20 bidirectional schmitt-trigger GPIO pins,
digital audio codec via the AC97/I2S interfaces, 4 12-bit 0-3.3V analog input (ADC) pins and a high speed
dedicated (Up to 14.7Mhz) SPI bus. Also, a simple 8-bit multiplexed general purpose parallel bus implemented
in the on-board CPLD is available via GPIO pins 0-13. The 26-pin header brings out other interfaces such as JTAG,
USB, special lines for the TS-9441 and 1.8V/3.3V/5V power supply.
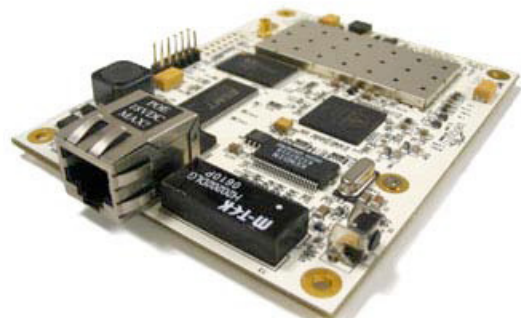
LiteStation2   LiteStation5

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. (2.4Ghz or 5Ghz)

APPLICATIONS

**MultiPoint CPE**   **Mesh/Mobility CPE**   **Bridging**

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.
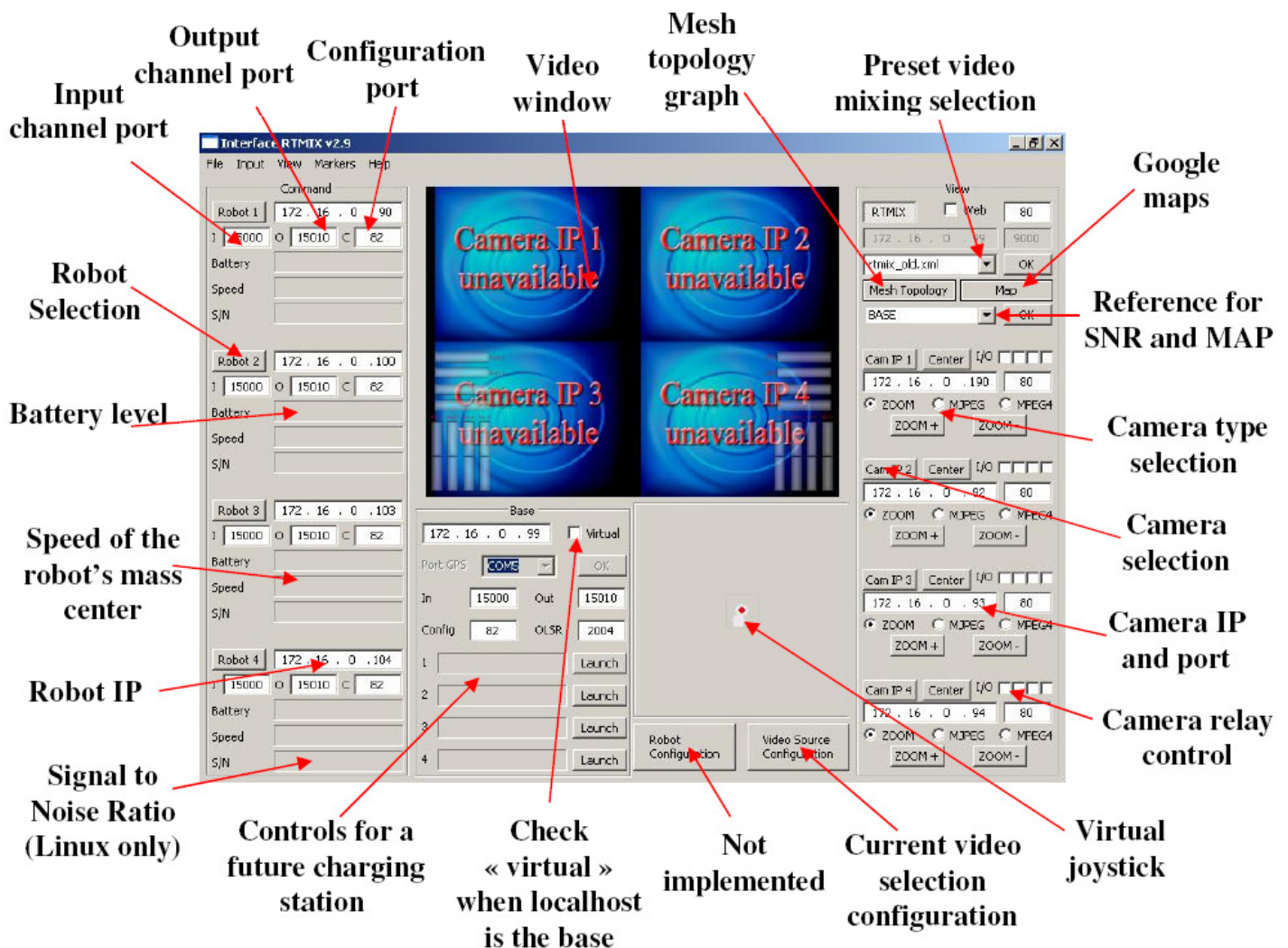
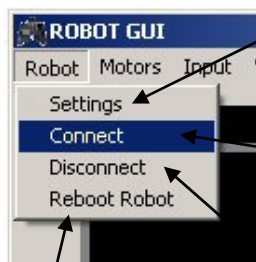## The simple control software (TCP) :
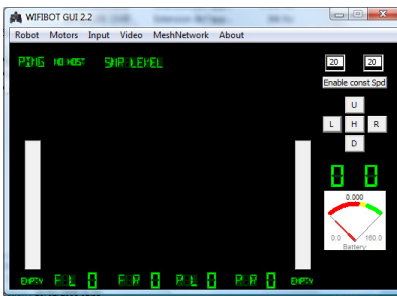
The control software:

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.
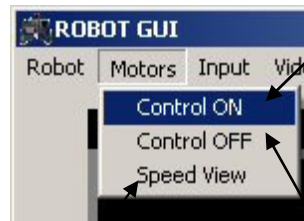
The menu options:

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.

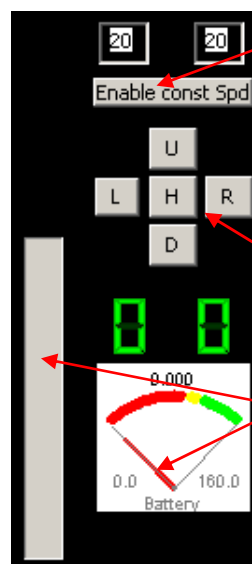**Speed View:** Plots in real time the speed signal from the code wheels.

Motor Control OFF: Deactivates the speed control.
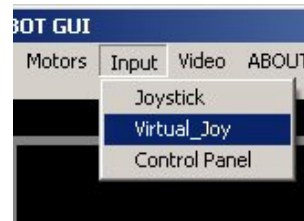
Input Selections (control panel for calibrating the joystick)
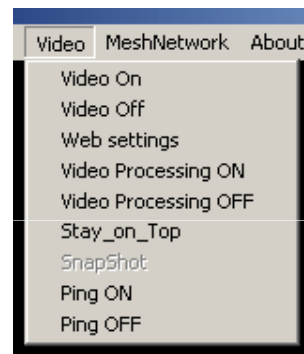
Video selections: Allows to configure and control some options of the camera.

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.