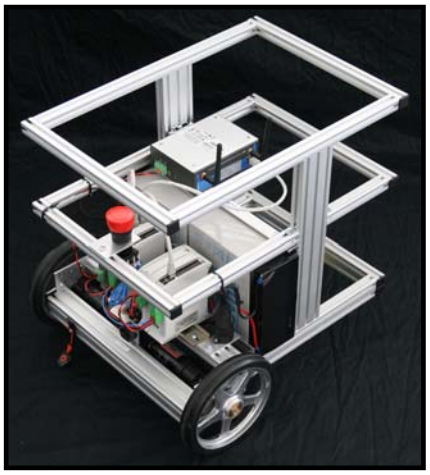
Réf : FMod-MOBILEROBOT
Projet : Wi-Fi mobile robot 11/12/2007

five co
innovative engineering

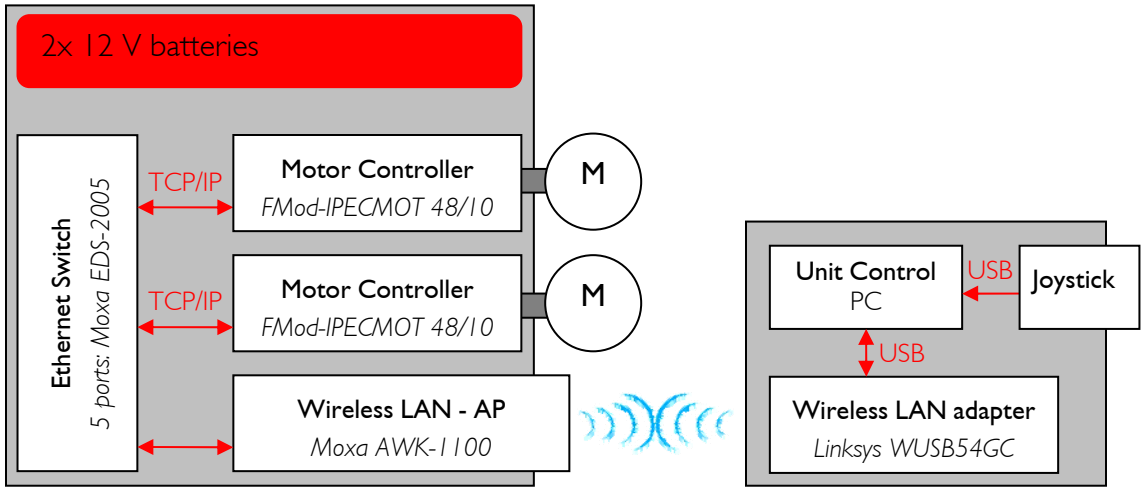
Based on a mechanical structure developed by BlueBotics, this mobile robot is remotely operated with a joystick through a Wi-Fi wireless communication protocol.

Motor control cards that have been integrated to this robot use an Ethernet communication bus.

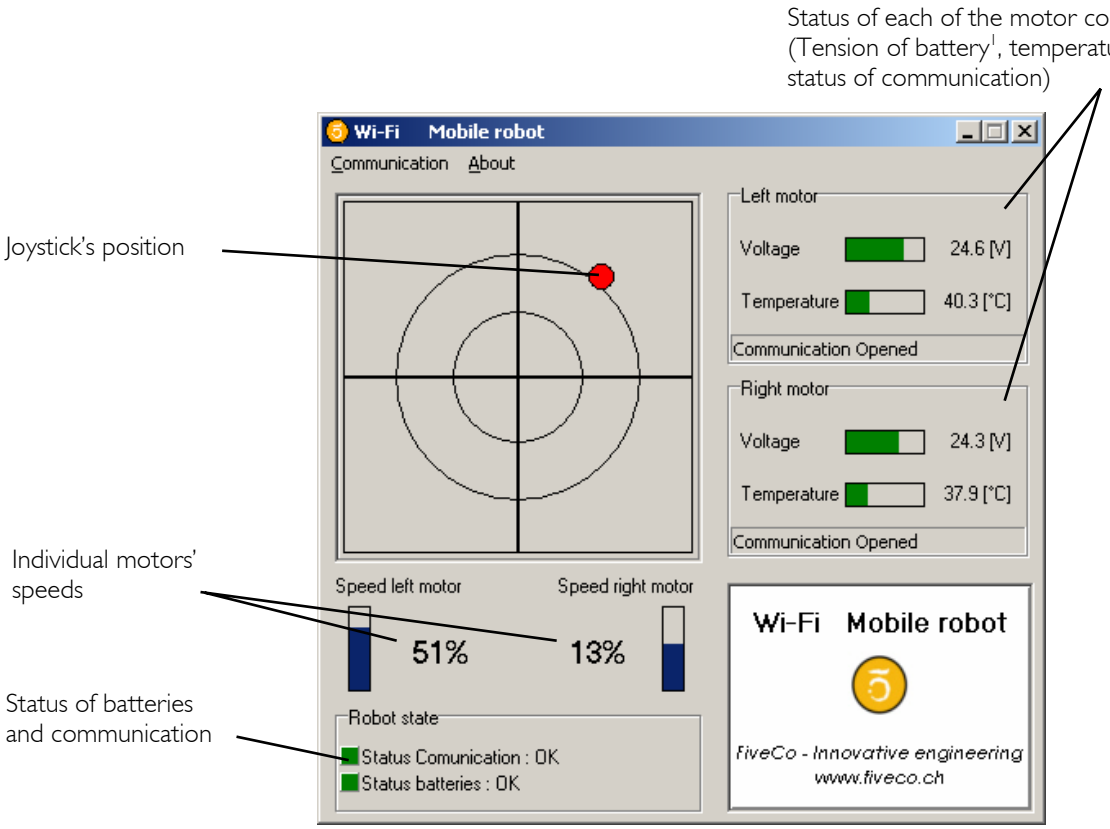


Power Supply	
Voltage	24 VDC
Battery type	2x 12 VDC batteries, in series
Complete charging time	8 hours
Autonomy while on standby	30 hours
Autonomy under maximal use	6 hours
The red button turns the robot on and off. It is also used as an emergency shut down button. The robot must be turned-off before it is manually moved. The robot must always be off during charge.	
Mechanical specifications	
Maximum load	30 kg
Motor type	Maxon brushless + incremental encoder + harmonic drive reducer
Platform's dimensions	Height : 474 mm Width : 412 mm Length : 465 mm
Wireless communication	
Distances for inside use.	On a straight line, more than 40 meters. CAUTION : walls and metallic structures will have a major influence and greatly reduce that distance.
Distances for outside use.	50 m.
Quality of signal	Signal's quality should never be inferior to 75%. Regardless, one might still encounter wireless signal loss. In such cases, the communication software will try to reinstate the communication.

Bloc outline



Teleoperating software



[1] The battery's tension indicates its level of charge. When said charge is below 22.5 V, the robot can still be used but will need to be charged within short delays. However, if the charge level reaches 21.5 V, the robot will stop working. It will then need to be turned-off and put on charge before it can be used again

[2] Motor controller cards' temperature is also checked and is indicated by the color of the gage.

- Yellow: temperature above 80 °C.
- Red: temperature above 120 °C.

Install file parameters

```
*************************
[IP addresses]
*************************
IP address left motor=192.168.1.251
IP address right motor=192.168.1.252

*************************
[Joystick function]
*************************
Buttons enabled=1
Speed regulation=1

Joystick dead zone=250

*************************
[Motor Speed]
*************************
Motor speed max=150000
Relative turn factor=0.5
```

IP address for both motor controller cards.

Joystick's buttons' functions are active (1) or not (0).
Maximum speed regulation toothed-wheel is active (1) or not (0).

Joystick's dead zone set around zero in order to avoid the robot moving upon release of the joystick.

Maximum motor speed.
Sensitivity while in rotation:
Example : 3 → highly sensitive while in rotation, low linear speed.
0.1 → low sensitivity while in rotation, high linear speed.

Joystick controls

Button 2 : Moves backwards on a straight line..
Button 3 : Moves forward on a straight line.
Button 4 : Rotates to the left, with itself as central axis.
Button 5 : Rotates to the right, with itself as central axis.

Motor speed, while using the buttons, is defined through the use of the limitation toothed-wheel.