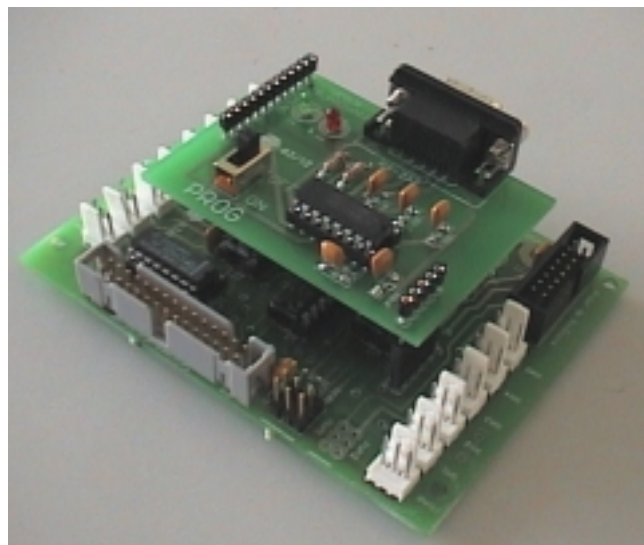




IdMind – Engenharia de Sistemas, Lda.  
<http://www.idmind.pt>

## Advanced Basic Hardware



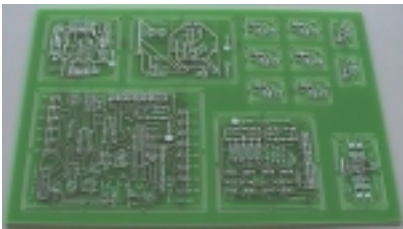
September 2005

## Description:

This kit includes:

- 1 Controller board (PIC included)
- 1 Analog interface board
- 1 H-bridge board
- 1 DC-DC converter board
- 8 Analog sensor boards
- 1 Programming board
- 8 IR emitters/receivers
- 8 green LEDs and 8 LDRs
- Programming Software
- Technical Manual

This kit does not include: motors, wheels, or any kind of structure to hold the boards.



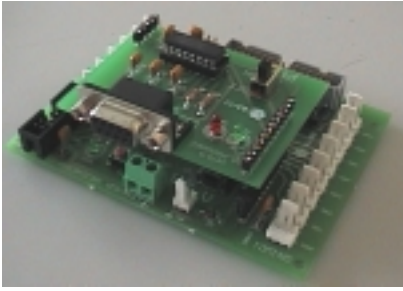
Set of boards that compose the kit:

- Controller board (PIC included)
- Analog interface board
- H-bridge board
- DC-DC converter board
- 8 Analog sensor boards



Controller board with PIC microcontroller allows:

- 2 or 3 servo motors actuation;
- or 2 Motors DC actuation;
- 12 analog sensors reading:
  - ✓8 multiplexed receivers with pulsed emitters (ex: IR emitter/receiver, light emitter and light receiver(LDR));
  - ✓4 without emitter (ex: IR Sharp sensor, LDR, humidity sensor, temperature sensor, compass sensor, etc.);
- 5 digital I/O ports.



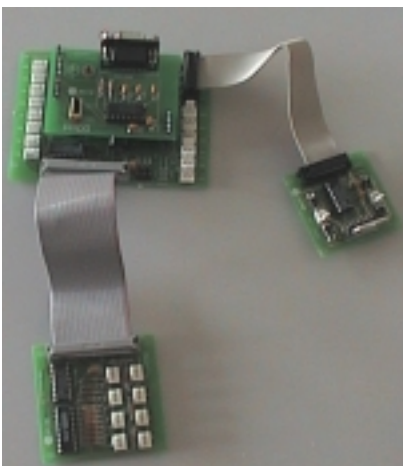
Controller board with programming board.



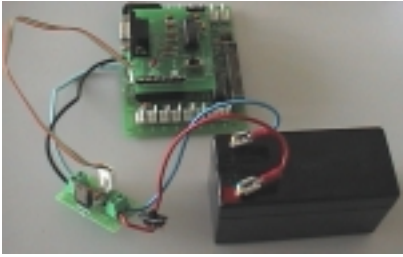
Analog interface board for 8 analog sensors (emitter/receiver). In the figure this board is connected to two sensors: One board with an IR receiver and another board with a green led and an LDR.



The H-bridge board allows the actuation of two DC motors.

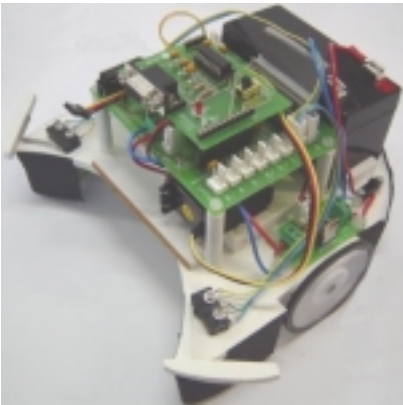


Connection of the controller board to the H-bridge board and analog interface board.



It uses a DC-DC converter to convert 12V from a battery to the 5V needed by the controller board electronics.

In the next photo it is showed a soccer robot built using this kit.



This robot uses: 2 touch sensors; 4 Infrared receivers to detect an IR Junior Soccer Ball; and 4 green LEDs and 4 LDRs to detect the levels of grey of the soccer field. Actuation uses two 12V DC motors for the movement and one servo motor for the kicker device.

### Programming tools

This robot can be programmed with the MPLAB application using assembly as the programming language. This software can be freely downloaded from [Microchip](http://www.microchip.com). But for a less experienced programmer we advise the use of graphical programming software, from IdMind. With this software the user just has to create a flow-chart of the program, compile it, and download it to the robot. This software is included with our robotic kits.



For more information about the product don't hesitate to contact us [info@idmind.pt](mailto:info@idmind.pt).