

# E-PUCK

EPFL EDUCATIONAL AND RESEARCH MINI MOBILE ROBOT

Swiss Made

e-puck is the latest mini mobile robot developed at the Swiss Federal Institute of Technology in Lausanne (EPFL) for teaching purposes. Already in use in many research and educational institutes, it is now also commercially available from GCtronic.

e-puck is powered by a dsPIC processor and features a large number of sensors in its standard configuration (IR proximity, sound, accelerometer, camera). The e-puck hardware and software is fully open source giving low-level access to every electronic device and offering unlimited extension possibilities. A flourishing user community provides software, documentation and discussion groups.



[www.gctronic.com/products/e-puck/](http://www.gctronic.com/products/e-puck/)

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## Developed by the same creators of the successful Khepera robot, e-puck offers the following advantages:



**NICE DESIGN:** the robot has a simple mechanical structure. The electronics, processor structure and software are an example of a clean and modern system.

**FLEXIBILITY:** because of the number of sensors and actuators, the embedded processing power and the extension possibilities, the robot covers a large spectrum of educational activities. Potential educational fields are mobile robotics, real-time programming, embedded systems, signal processing, image or sound feature extraction, human-machine interaction and collective systems.

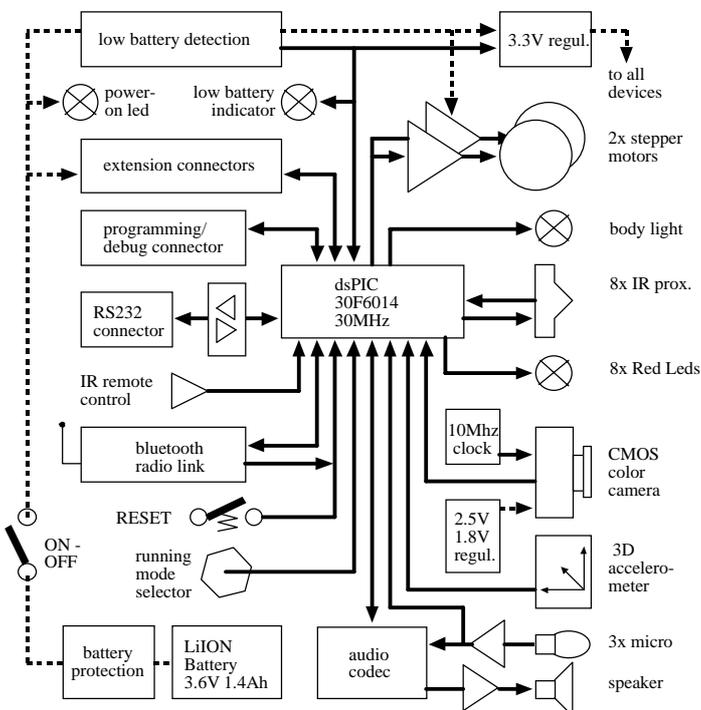
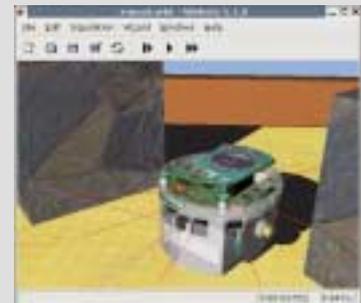
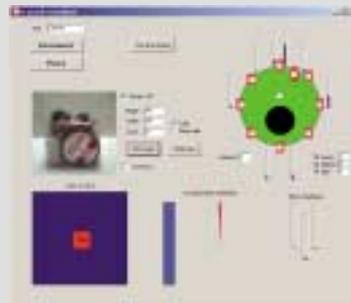
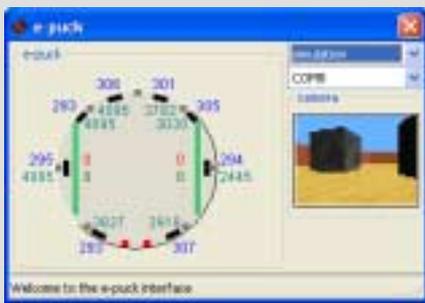
**USER FRIENDLY:** e-puck is small and easy to exploit on a table next to a computer providing an optimal working comfort. It needs no wiring (programmed via Bluetooth), the rechargeable battery has a long autonomy and can also be easily replaced.

**ROBUSTNESS AND SIMPLE MAINTENANCE:** the robot resists to student use and is simple and cheap to repair.

**TESTED:** more than 400 units have been used during the last 2 years in different courses, student and research projects. The recent re-design took advantage of the gained experience.

**AFFORDABLE:** the very competitive price allows using e-puck for education and collective research.

*e-puck is based on an open hardware concept, where all documents are distributed and submitted to a license allowing everybody to freely use and contribute to the project. The official e-puck web site is [www.e-puck.org](http://www.e-puck.org)*



Feature	Technical information
<b>Size, weight</b>	70 mm diameter, 55 mm height, 150 g
<b>Battery, autonomy</b>	5Wh LiION rechargeable and removable battery. About 3 hours autonomy
<b>Processor</b>	dsPIC 30F6014A @ 60MHz (~ 15 MIPS) 16 bit microcontroller with DSP core
<b>Memory</b>	RAM: 8 KB; Flash: 144 KB
<b>Motors</b>	2 stepper motors with a 50:1 reduction gear, resolution 0.13 mm
<b>Speed</b>	Max: 15 cm/s
<b>Mechanical structure</b>	Transparent plastic body supporting PCBs, battery and motors
<b>IR sensors</b>	8 infra-red sensors measuring ambient light and proximity of objects up to 6 cm
<b>Camera</b>	VGA color camera with resolution of 640x480 (typical use: 52x39 or 640x1)
<b>Microphones</b>	3 omni-directional microphones for sound localization
<b>Accelerometer</b>	3D accelerometer along the X, Y and Z
<b>LEDs</b>	8 red LEDs on the ring, green LEDs in the body, 1 strong red LED in front
<b>Speaker</b>	On-board speaker capable of playing WAV or tone sounds.
<b>Switch</b>	16 position rotating switch
<b>Communication</b>	Standard Serial Port (up to 115kbps), wireless: Bluetooth
<b>Bluetooth</b>	Bluetooth for robot-computer and robot-robot wireless communication
<b>Remote Control</b>	Infra-red receiver for standard remote control commands
<b>Expansion bus</b>	Large expansion bus to add new possibilities to your robot
<b>Programming</b>	C programming with the GNU GCC compiler system, free compiler and IDE (integrated development environment)
<b>Simulation</b>	Webots facilitates the programming of e-puck with a powerful simulation, remote control and cross-compilation system

**PRICE:**  
 e-puck robot: 850 CHF (~530 €),  
 e-puck/charger/Webots STD bundle: 1250 CHF  
 Quantity discount available.



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