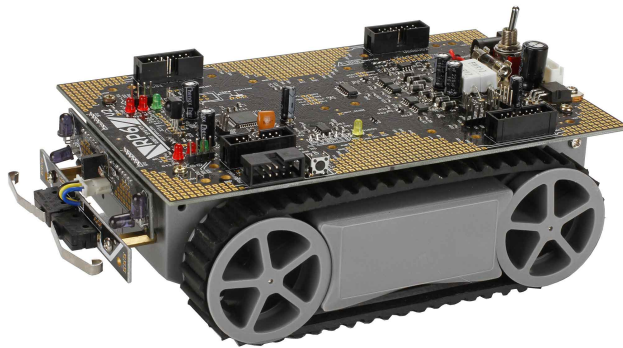# RP6v2

C-Programmable Robotic Vehicle

RP6v2 Capabilities:

Cruise around autonomously

Avoid obstacles

Follow light sources

Measure light intensity

Detect collisions

Detect blocked engines

Detect low battery

Measure and control rotational speed of motors via high-resolution encoders

Move given distance

Rotate specific angles

Measure driven distance

Move in geometric paths: circles, polygons, and others

Exchange data with other robots or devices

Operate as remote control car (RC5)

Transfer sensor data to PC via USB
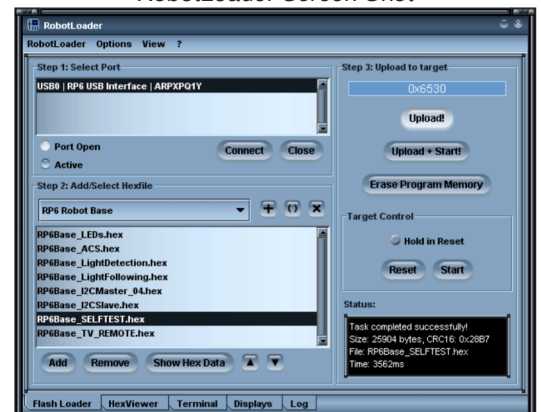
Expand via I^2C bus

Overview:

The RP6v2 is an economical autonomous mobile robot system which provides an introduction to the fascinating world of robotics. It is designed for beginners as well as experienced electronics and software developers.

Programmable in C, the RP6v2 has many possibilities for expansion as your programming skills grow.

The RP6v2 is ideal for educational curriculum at universities, trade schools, high schools and of course hobby users.

With an extensive manual, lots of example programs, and a huge C function library, programming is easy and you can instantly start experimenting with your robot. All library and example programs are open source (GNU GPL)!

RobotLoader Screen Shot

Features:

- ATMEGA32 8-bit RISC microcontroller with 8 MIPS and 8MHz clock
- Delivered fully assembled (no soldering needed)
- CD with software, 138 page manual, and many extras
- AVR-GCC and RobotLoader open source software for use with Windows and Linux
- Programmable in C
- Receives IR codes in RC5 format
- USB Interface for easy programming and communcation
- Module I^2C bus expansion system
- Expansion boards may be stacked as needed
- Sample C programs and huge C function library
- Powerful tank drive train can drive up steep ramps and over obstacles
- Large payload capacity
- Light, collision, speed and IR-obstacle sensors integrated
- Two 7.2V DC motors
- 625 CPR encoder resolution for precise speed regulation
- Six PCB expansion areas

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RP6v2

RP6v2 comes
with the
following
items:

RP6v2 vehicle

CD

10-pin
connector

USB connector
cable

USB
programmer
interface

Specifications

Model RP6v2	
Processor memory	32KB Flash ROM 2 KB SRAM 1 KB EEPROM
USB upload rate	500kBaud
Expansion system	Two-wire I²C bus 400 kBit/s transfers 127 devices
Encoder resolution	625 CPR
Max speed of vehicle	25 cm/s
Traverse obstacles	ca. 2 cm height
Negotiate ramps	30% steepness 40% with modifications
Bumper sensors	2 in front
ACS (Anti-Collision-System)	IR receiver and two IR diodes for left and right
Status LEDs	6 (4 may be appropriated)
Light sensors	2
ADC (Analog to Digital Converter)	2 (may be used as I/0)
Motor drivers	2 optimized MOSFET H-Bridges
Ground clearance	10 mm
Power supply connectors	2 x 5V and 1 x 7.2V
Voltage regulator	5V
Operating time	3-6 hours
Power supply	6 AA rechargeable batteries (not included)
Current consumption	500 mA
Dimensions (LxWxH)	172 x 128 x 50 mm
Technical data subject to change without notice	

Training & Support Manual on CD

Chapter 1: Introduction
　Expansion and technical data
　What the RP6 can do
　Application suggestions

Chapter 2: The RP6 in Detail
　Control system
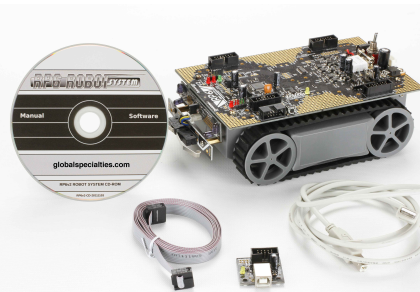　Power supply
　Sensors
　Drive system
　Expansion system

Chapter 3: Hardware & Software Setup

Chapter 4: Programming the RP6
　Configuring the Source Code Editor
　Program upload to the RP6
　Why C? And what's "GCC"?
　C- Crash Course for Beginners
　Makefiles
　The RP6 function library
　Example programs

Chapter 5: Experiment Board

Chapter 6: Closing Words

Appendix:
　Troubleshooting
　Encoder calibration
　Connector pinouts
　Recycling and safety instructions

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