

# RP6V2-C

## Autonomous Robotic Vehicle

### RP6V2-C 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<sup>2</sup>C bus



### Overview:

The RP6V2-C 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.

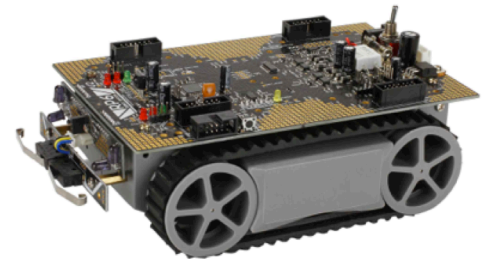
Programmable in C, the RP6V2-C has many possibilities for expansion as your programming skills grow.

The RP6V2-C 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)!

### 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 communication
- Module I2C 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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## Specifications

RP6V2 Robot	
Processor memory	32KB Flash ROM 2 KB SRAM 1 KB EEPROM
USB upload rate	500kBaud
Expansion system	Two-wire I <sup>2</sup> C 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/O)
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 (L x W x H)	172 x 128 x 50 mm
Technical data subject to change without notice	

RP6V2-C comes with the following items:

RP6V2 Robot

CD

10-pin connector

USB connector cable

USB programmer interface

Battery charger

RC5 Remote control

### Available Accessories

RP6V-M32

RP6V2-WIFI

RP6V2-EXP

RP6V2-DSP



Innovative Training Solutions

## 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

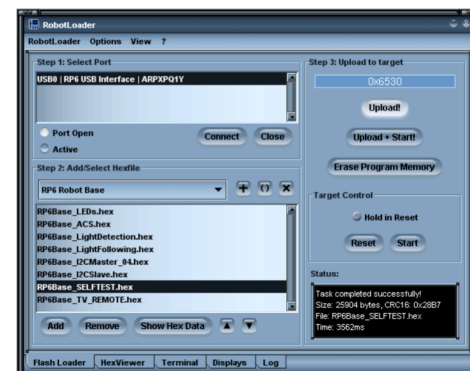
**Chapter 3:** Hardware & Software Setup

**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

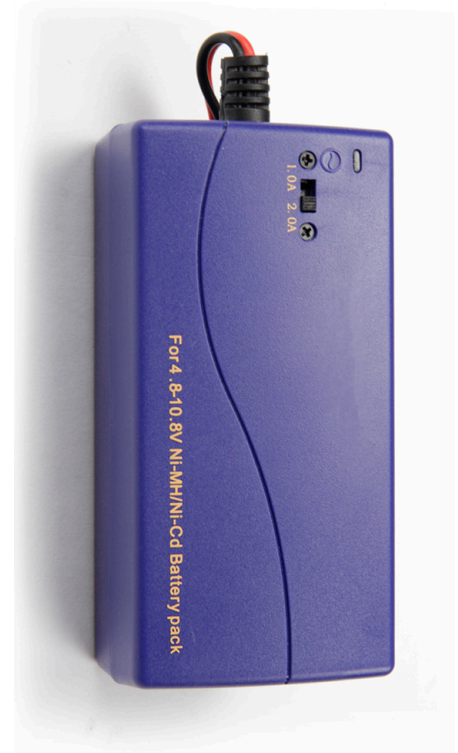


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## Specifications

<i>RP6V2 RC5 Remote Control</i>	
<b>Model</b>	RP6V2-RMT
<b>Frequency</b>	RC5
<b>Batteries</b>	2X AAA 1.5V



## Specifications

<i>RP6V2 Charger</i>	
<b>Model</b>	RP6V2-CHG
<b>Use</b>	USA & Europe
<b>Voltage</b>	110-240 VAC
<b>Frequency</b>	50-60 Hz
<b>Voltage range</b>	4.8 - 10.8 V
<b>Charging current</b>	1 A or 2 A
<b>1 A usage</b>	Battery pack 1000-2000 mAh
<b>2 A usage</b>	Battery packs over 2000 mAh
<b>Battery charge time</b>	Time ( Hrs ) = Battery capacity ( Ah ) / Charging current ( 1A or 2 A )