VolksBot® RT configurations

RT3  RT4  RT6

Robot Specifications

<table>
<thead>
<tr>
<th></th>
<th>RT3</th>
<th>RT4</th>
<th>RT6</th>
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</thead>
<tbody>
<tr>
<td>Dimensions (LxWxH)</td>
<td>590x540x340mm</td>
<td>520x520x260mm</td>
<td>670x510x220mm</td>
</tr>
<tr>
<td>Wheels (Tubed tyres)</td>
<td>260x85mm</td>
<td>260x85mm</td>
<td>210x50mm</td>
</tr>
<tr>
<td>Weight*</td>
<td>13kg</td>
<td>14.5kg</td>
<td>17.5kg</td>
</tr>
<tr>
<td>Max. Speed</td>
<td>1.4m/s</td>
<td>1.4m/s</td>
<td>1.1m/s</td>
</tr>
<tr>
<td>Max. Payload</td>
<td>40kg</td>
<td>40kg</td>
<td>40kg</td>
</tr>
</tbody>
</table>

* Excluding battery

Included in delivery

Robot kit  Including premounted and wired RT3, RT4 or RT6, user manual, universal notebook mount
Motors  Two Maxon DC Motors, 150W, shaft encoder, planetary gear: ratio 74:1
Battery  Two lead gel accumulators: 12V, 7200mAh, 2.5 kg  One battery charger, 24V
Motor Controller 3-channel motorcontroller, 12-24 V DC, 6A continuous current per channel, supports DC motors up to 150W, 3 separate encoder inputs, Binary communication through RS232 port, configurable PID controller for each channel, configurable current limitation, permanent storage of up to 4 configuration sets
Software  ICONNECT™ educational licence
Power Panel 2-channel redundant emergency stop (category 0-Stop), deep discharge protection, reverse voltage protection, status indication, max. continuous battery discharge 20A

Customized solutions

By use of VolksBot components, Fraunhofer IAS also develops customized solutions for mobile robotic applications. Please do not hesitate to contact us.

Please consult the VolksBot® Website www.volksbot.de for further information.

Sale

All components and sets are available for sale via Steinbeis Transferzentrum. For further information please contact:

Steinbeis-Transferzentrum Informationstechnische Systeme
Project: VolksBot
Schloss Birlinghoven
53754 Sankt Augustin, Germany
Phone + 49 (0) 22 41 / 14-34 64
Fax + 49 (0) 22 41 / 14-23 42
Email sale@volksbot.de

Research and Development

Fraunhofer Institute for Intelligent Analysis and Information Systems

Please contact:
Fraunhofer IAS
Project: VolksBot
Schloss Birlinghoven
53754 Sankt Augustin, Germany
Phone + 49 (0) 22 41 / 14-24 44
Fax + 49 (0) 22 41 / 14-23 42
Email info@volksbot.de

Research - Education - Physical Rapid Prototyping
The VolksBot® Concept

VolksBot® is a modular mobile robot construction kit, designed to fit the needs in research and education as well as in application oriented rapid prototyping. The component-based approach offers a plug-in architecture in electronic hardware, software and mechanics. It provides open interfaces to reusable hardware and software modules. Combined with an effective and robust design, a wide range of domain-specific robots can be created with little effort.

Initially the VolksBot® concept was successfully applied in indoor applications. Now we extended the kit to also fit the demands of rough terrain. With VolksBot® RT real-life applications can quickly be put into practice at a reasonable price.

Scalable Aluminum Chassis

Depending on the desired dimensions and type of robot, the robots chassis can be created using light-weight aluminum machine construction beams. Simple and rigid connections between beams and additional components can be established using pluggable nuts and screws. The beams are industry standard, providing the high rigidity needed for robust robots. This approach provides maximum flexibility in the robots mechanical configuration with minimum machining effort.

UDU (Universal Drive Unit)

The UDU is a mechanical component for connecting an arbitrary number of wheels to one common motor. It consists of two bearing blocks, a steel shaft and two chain sprockets. The transmission between two UDUs is established via chain-drive. Since these drive units can be fixed anywhere along the chassis, it is possible to customize the wheel distances easily. Five different types of tubed tyres, ranging from 18cm to 40cm, are available for the UDU. Maxon 150W DC motors, including shaft-encoders and planetary-gear, are connected to the UDU’s via claw couplings.

VolksBot Motor Controller: VMC

The new VMC is a specially designed motor controller for mobile robotic applications. It offers PID velocity control for three DC motors with up to 150W each. The controller features odometric data analysis, support of standardized interfaces, permanent storage of parameter sets and an API for convenient operation under Windows and Linux. The VMC is also available as separate component.

Sensor Systems: AISVision & 3DLS

A catadioptric vision system AISVision including a Firewire CCD camera and a hyperbolic mirror allows a 360° field of view. A color vision library for ICONNECT™ is free to download at www.volksbot.de for non-commercial use. A 3D-Laser-Scanner allows quick, precise and cost-effective three-dimensional scanning of scenes and objects. The fields of application include map generation, surveying of rooms and spaces, building surveillance, tunnel or mine shaft inspection and many more. More information about 3DLS is available at www.3d-scanner.net. The AISVision system, its mirror as well as the 3DLS are available as separate components.

Software

Also in software, modularity is ensured, using the professional ICONNECT™ framework by Micro-Epsilon Messtechnik. The software is based on the signal flow principle and real-time capable under Windows®. A library of existing modules can be used and extended with own functionality by programming modules in C++. Fraunhofer IAS provides a module-pool for mobile robotics at www.volksbot.de. ICONNECT™ is provided with the VolksBot® RT kit for non-commercial use. More information about ICONNECT™ is available at www.iconnect.micro-epsilon.de.

Power Panel

The new VolksBot® Power Panel combines various safety features regarding power management and robot operation. It includes an emergency stop function, protection against deep battery discharge, usage of automotive circuit breakers against over current and for reverse voltage protection. The front panel includes a main-power switch, charger plugs and status LEDs for convenient robot operation.

Real-life Applications

With the VolksBot® RT construction kit various variants of powerful mobile robots can quickly be built and adapted for different applications. Autonomous transportation, exploration, surveillance, education, research and industrial rapid-prototyping are just some examples for domains where your VolksBot® RT can take part in the real-life.