Fraunhofer IML

evoBOT® - Version 3.0

Technical Data Sheet

A new generation of autonomous mobile robot systems - evoBOT® is versatile and can fulfill a wide spectrum of use cases. Through the combination individual capabilities of previous systems evoBOT® overcomes the limits of conventional systems available on the market which are usually limited to special use cases.

From concept to prototype

One robot, many possibilities
The development of evoBOT® has started with the vision to create a flexible robot system which fulfills a wide spectrum of capabilities. This includes transportation of packages, pulling goods or picking up and putting down on different shelf levels. To realize this modular robot system, hard- and software must work together perfectly.

Development process
One of the most important aspects in the development was maximizing flexibility and adaptability. Through usage of latest hard- and software evoBOT® gets its manifold application options and can easily be integrated in existing systems.

Technical specification

Mechanical construction
The principle of an inverse pendulum without an external counterweight allows a space saving and lightweight concept. Moreover the driving dynamic is maximized by the constant strain of the driving weels.

- direct drive
- increased energy efficiency through self-locking lifting arms
- increased stability through topology optimized design
- size and driving performance scalable, dependent on desired characteristics
- configurable design, tuned for the use case
- usage of individual handle technology

Modular prototype

- **prototype: Version 3.0**
- **scalable height**
- **length: 192 mm**
- **width**: **785 mm**
- **40 kg weight**
- **60 km/h maximum speed**
- **65 kg liftig capacity**

Hardware architecture and technology
Despite of its versatile capabilities, the whole technology of evoBOT® is completely integrated in the robot. Accordingly no additional hardware is necessary. For the robot layot cost-efficient components were used that complies to the latest technology regarding precision, efficiency and dynamic.

Autonomy und navigation
Localization algorithms are specially developed to allow extreme inclination angle and high velocities. Through this, use indoors and outdoors becomes possible. Further details about autonomy and navigation:

- usage of Visual Slam for navigation indoors and outdoors
- near field recognition by sensors
- localization accuracy in one-digit centimeter range

Operation of the robot
The prototype currently has a driving time of 5-8 hours. Furthermore, the evoBOT® is able to drive on different and uneven surfaces. With a suitable surface, a slop of up to 45 degrees can be comfortably managed.

Technical data
The compact evoBOT® has a height of 923mm, width of 785mm and length of 192mm, with a weight of 40 kilograms. The maximum speed is 60 km/h with a strong acceleration and braking effect. The lifting capacity is currently at 65 kg and a payload of 100kg. This specification is strongly dependent on the application and can be individually adapted.

Further Information

Are you curious now?
You can find further information on our websites:

Fraunhofer Institute for Material Flow and Logistics:
https://www.iml.fraunhofer.de/en.html

evoBOT® Homepage:
https://www.iml.fraunhofer.de/en/evoBOT.html

Department IoT and Embedded Systems:
https://www.iml.fraunhofer.de/en/IoT.html

We are looking forward for a cooperation with you!

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