***Module name**: Mobile robot motion control*

- ***Main functionalities**:*

This module consists of two sub-modules, each performing different motion control tasks.

Open-loop motion control: the main functionality of this sub-module is to perform different pre-programed or time-controlled movement patterns.

Machine vision-based closed-loop motion control: the main functionality of this sub-module is to implement closed-loop motion control algorithms based on machine vison calculations executed on images.

- ***Technical specifications:***

This module is created with LabVIEW™ software.

The Open-loop motion control sub-module doesn't require any hardware.

The Machine vision-based closed-loop motion control sub-module requires the Festo Robotino® v2 equipped with 3 optical proximity switches. Two of the optical proximity switches are the same optical proximity switches as in the Optical line following sub-module and one additional optical proximity switch is required to be mounted on the front of the Robotino®[1] and connected to the DI2 input of the Robotino®.

The Machine vision-based closed-loop motion control sub-module requires the Object detection by chromatic discrimination sub-module.

- ***Inputs and outputs:***

Open-loop motion control

  - *Inputs: rotational and linear speeds, the amount of time while the module is executing.*
  - *Outputs: movement speeds for the Robotino®.*

Machine vision-based closed-loop motion control

  - *Inputs: image, HSL parameters of all objects to be detected, HSL parameters of the targeting markers, minimum number of pixels, DI0:3 inputs from the Robotino®*
  - *Output: movement speeds for the Robotino®.*

- ***Interface specification:***

In case the software is used i.e. the sub-modules are operated by the end user, then the end user cannot perform any action with these sub-modules, since these sub-modules are parts of the software.

In case these sub-modules are incorporated in another software then a software developer can use these sub-modules to make the Robotino® move itself in open-loop or in closed-loop control mode.

- ***Formats and standards used**:*

JPG image format, HSL color space.

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[1] *Assembly instructions are available on request.*

- ***Availability:***

The module is already available in source code and as a part of a standalone desktop application by contacting the authors of this description.

- ***Application scenarios:***

Motion control of mobile robots.

Intralogistics.

- ***Offered for internal / external use***

The module as a source code is available both for internal and external use.