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Guides and Resources: Basic IO - QBot 2

Motors

This document will summarize how to write commands to the QBot 2's motors.

Writing to Motors

Note: Ensure that your QBot 2 is powered ON and that a connection has been established to it. Follow the steps under Charging Vehicle Batteries and Communicating with the QBot 2 in the Research Studio Setup Guide.

Note: Ensure that you have read and understood all the safety procedures and guidelines regarding charging Lithium Polymer batteries as well as guidelines on using the QBot 2 in a safe manner outlined in the Research Studio Setup Guide. If you have any concerns or questions, please contact Quanser technical support (tech@quanser.com).

Note: Safety eye glasses should always be worn, even outside the net.

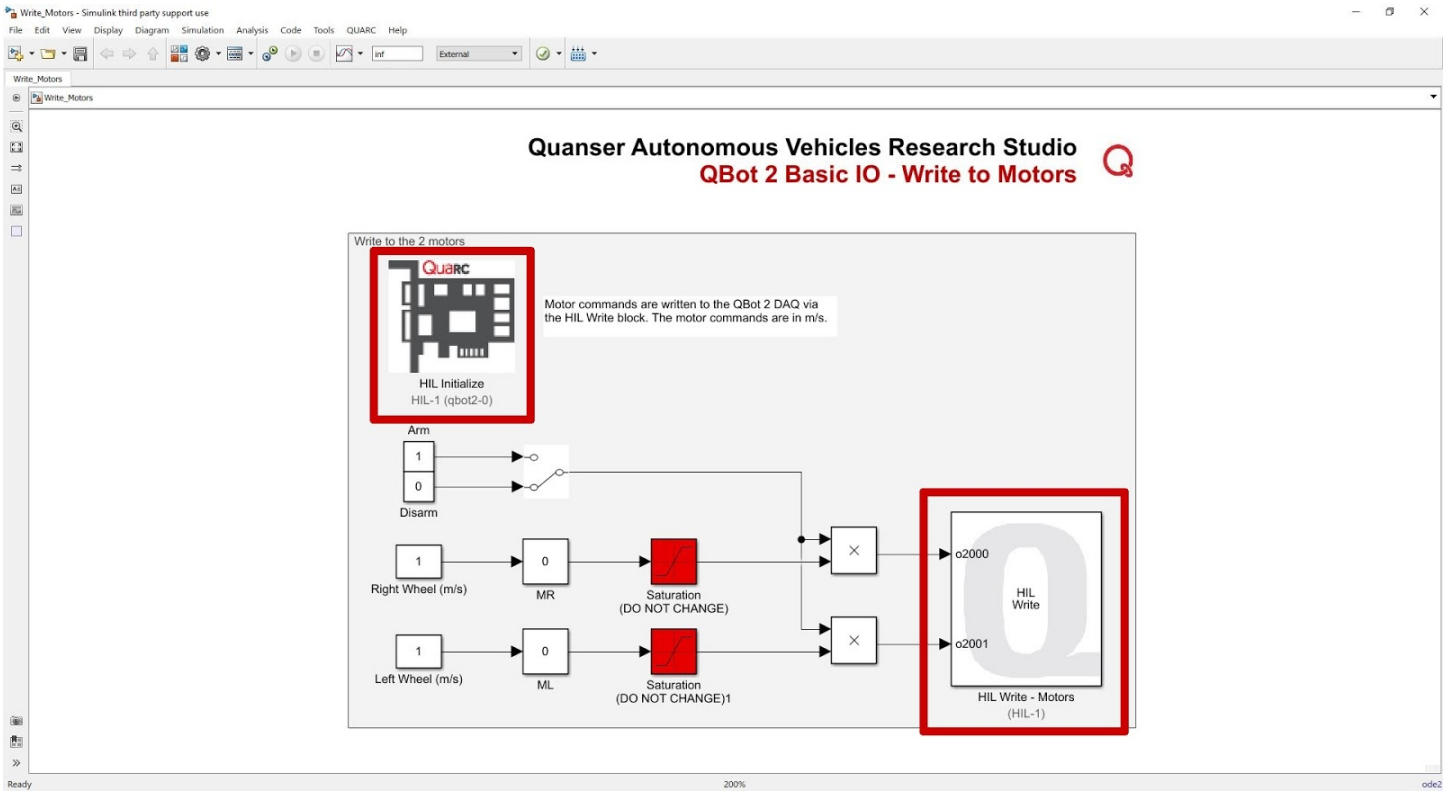

Figure 1: Write_Motors.slx model, highlighting the HIL Initialize and HIL Write blocks

1. Under the Guides and Resources > Basic IO > QBot 2 > Software folder, open Write_Motors.slx (Figure 1)

Note: For the latest documentation and controllers, please visit Autonomous Vehicles Research Studio Resources.

Autonomous Vehicles Research Studio Resources weblink:
https://www.quanser.com/products/autonomous-vehicles-research-studio/

2. Under Model Configuration Settings, input the correct QBot 2 IP address.

Note: See the QBot 2 IO Check section in the Research Studio Setup Guide for more information.

3. Build the model (QUARC menu > Build).
4. Start the model (QUARC menu > Start).
5. The QBot 2 will emit a sequence of beeps signifying that the model is running.
6. Move the Arm/Disable manual switch in the model to the Arm position.
7. Double click on the slider gains labelled MR and ML and slide them between -0.7 and 0.7 m/s to change each motor's speed. These values are written to the QBot 2's motors via the HIL Write Block, where the channels are configured in the HIL Initialize block (Figure 1).

Note: A HIL Initialize block must always be present and configured correctly for any IO to take place. The HIL read/write blocks allow you to read from and write to the channels configured in the HIL Initialize block. See Guides and Resources > Concepts for more information.

8. Disarm the QBot 2 by moving the Arm/Disarm manual switch to the Disarm position.
9. Stop the model.

This completes a tutorial on how to write commands to the Motors. For more information on how to command linear and angular velocities and converting them to motor commands, see Guides and Resources > Concepts.