

Robot Controller Code Generation

When applying to Mindstorm robots, we need to take into account :

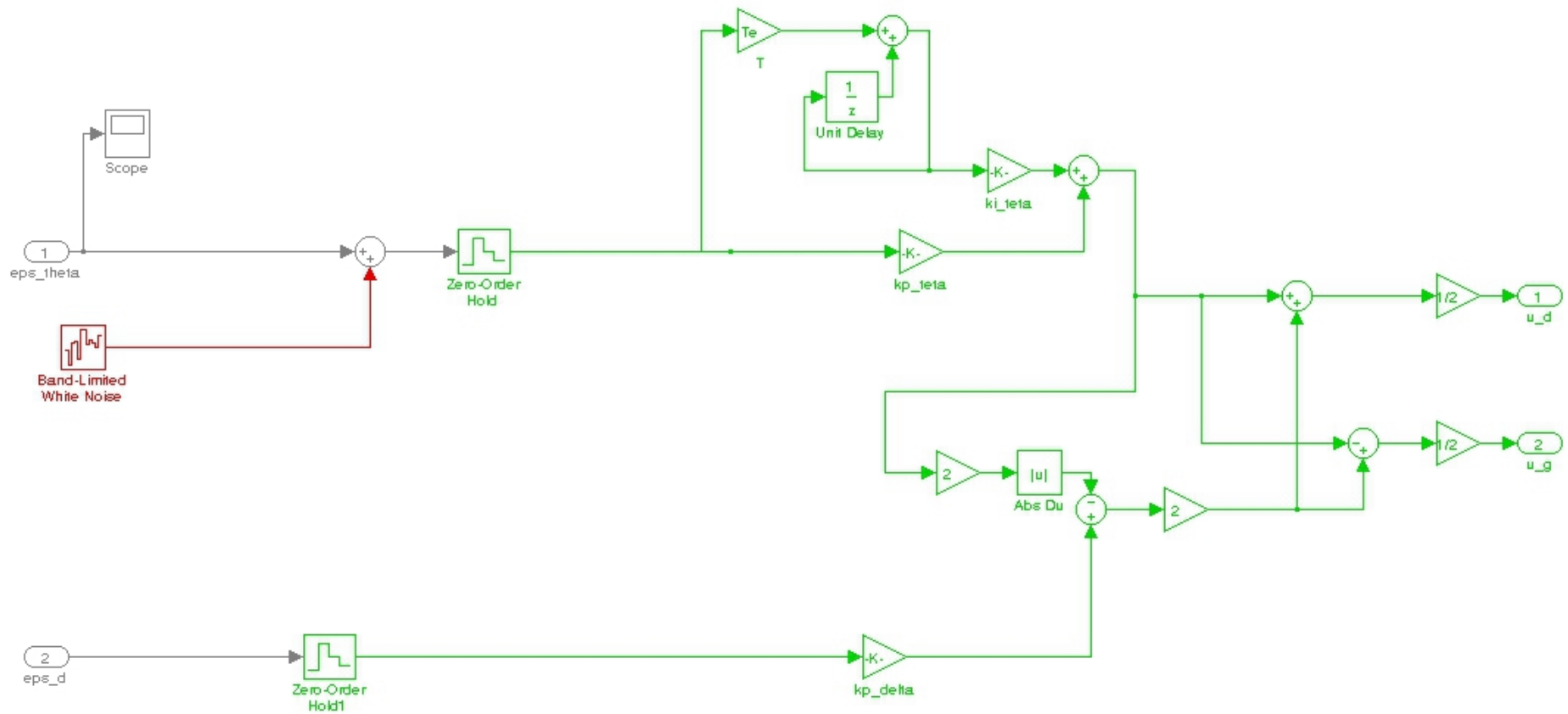
- 1) The REALISTIC ranges of the values of sensors Cg and Cd
- 2) The REALISTIC ranges of the command values Ud and Ug (speeds of the wheels)

Conversion from Double to Real

When applying to Mindstorm robots, we need to take into account:

- 1) The REALISTIC ranges of the values of sensors C_g and C_d
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The Controller



Example

An example of the equation describing the evolution of Ud

$$Ud[k] = 0.5 (A[k] + B[k])$$

- where A is the term corresponding to the output of the PI controller regulating the angle θ

We will first find the multiplicative coefficient for A

- It is then possible to describe A by the following difference equation:

$$A[k] = (\pi/200)T_e k_{i\theta} (C_d[k] - C_g[k]) + A[k-1]$$

Realistic input and output ranges

We need to answer the following questions:

- What is the range of the sensor values C_d and C_g ?
- What is the range of the control values U_d and U_g ?
- This will allow finding an appropriate multiplicative coefficient