Model Documentation of the Hysteresis System

1 Nomenclature

1.1 Nomenclature for Model Equations

s_1	switching treshold down
s_2	switching treshold up
y_i	output values of the hysteresis system for i = 1,2
$T_{storage}$	time constant of the internal PT1
w	input signal

2 Model Equations

Input Vector:

$$u = w$$

Equations:

$$[..] \tag{1a}$$

Parameters: s_1, s_2, y_1, y_2, $T_{storage}$
Outputs: y

2.1 Exemplary parameter values

Symbol	Value
s_1	4
s_2	8
y_1	2
y_2	11
$T_{storage}$	0.0001

3 Derivation and Explanation

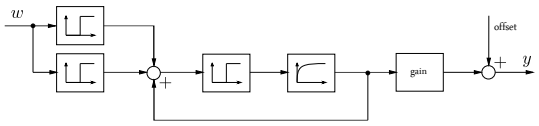

Figure 1: Block Diagram

4 Simulation

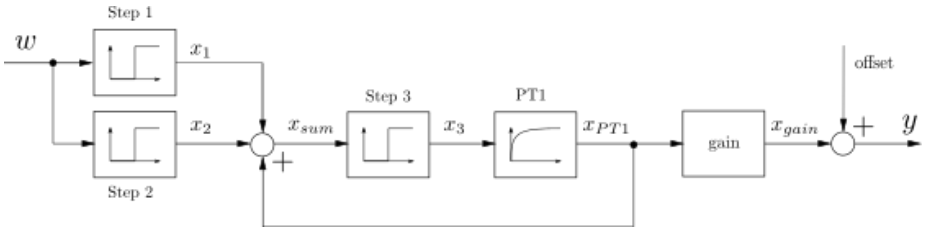

Figure 2: Simulation of the hysteresis system.

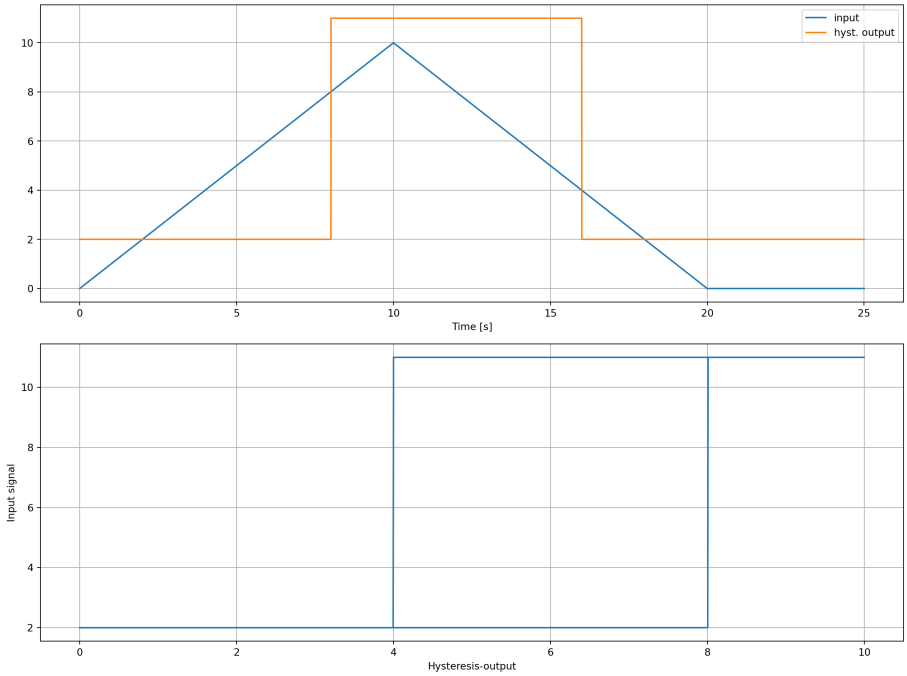

Figure 3: Simulation of the hysteresis system.

References

[1] Knoll, Carsten: *Approximation of a simple hysteresis system.*, Python script published 2021.
`https://github.com/TUD-RST/pyblocksim/blob/master/examples/example-hysteresis.py`