

# delay\_discrete.xbe

## Attributes

```
xbe name=delay_discrete save_history=yes allow_ssw=no
+ delay=yes
#
# The input (x) is assumed to be a sampled quantity (or a function
# of sampled quantities). The output is a delayed version of the
# input. (delay of up to 3 periods is allowed)
#
Jacobian: variable
input_vars: x
output_vars: y
aux_vars:
iparms: n_delay=1
sparms:
rparms:
+ T=10u
+ t0=0
+ dt=1u
+ y_current=0
+ y_old_1=0
+ y_old_2=0
+ y_old_3=0
+ y_old_4=0
+ epsl1=0
+ epsl2=0
stparms: y_st=0
igparms:
outparms: x y
```

## Description

delay\_discrete.xbe is used to delay a sampled signal ( $x$ ) by 1, 2, or 3 clock periods. The parameters have the following meaning:

**T:** clock period.

**n.delay:** Number of clock periods by which  $x$  should be delayed. n.delay can be 1, 2, or 3.

**t0:** offset which determines the position of the first sample. It should be the same as the t0 value assigned to the sampler.xbe element which was used for sampling.

**dt:** dt is related to the resolution of the output  $y(t)$ . It should be small as compared to T.

$x$  and  $y$  are made available as output variables. Fig. 1 shows waveforms obtained with delay\_discrete.xbe.

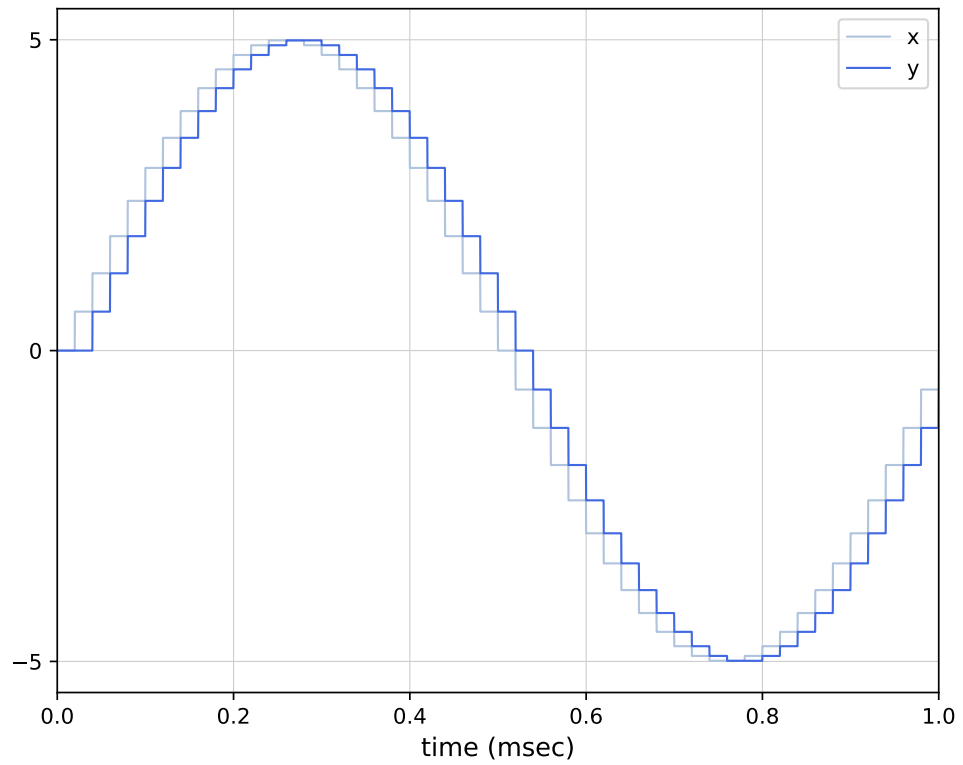


Figure 1: Waveforms obtained with `delay_discrete.xbe`, with `n.delay = 1`,  $T = 0.02m$ ,  $t_0 = 0$ ,  $dt = 0.2u$ .