clock_1.xbe

Attributes

```
xbe name=clock_1 evaluate=yes limit_tstep=yes
# clock source, with f_hz and duty cycle specified
Jacobian: constant
input_vars:
output_vars: y
aux_vars:
iparms:
sparms:
rparms:
+   f_hz=1e3
+   D=0.5
+   y_high=1
+   delta1=0.01
+   delta2=0.01
+   t0=0
+   T1=0
+   T2=0
+   T=0
+   L0=0
+   tk1=0
+   tk2=0
+   tk3=0
+   tk4=0
+   tk5=0
+   slope1=0
+   slope2=0
+   epsl=0
stparms:
igparms:
outparms: y
```

Description

clock_1.xbe is a square wave source with y as its output. In the first interval (T1) of each period, $y = y_{high}$, and in the second interval (T2), $y = 0$. The parameters have the following meaning.

f_hz: Frequency in Hz.

D: Duty ratio; e.g., D=0.5 means a duty ratio of 50%.

t0: An "offset" time interval by which the waveform is shifted (to the right).

delta1: Width of the transition from the T2 phase to the T1 phase.

delta2: Width of the transition from the T1 phase to the T2 phase.

y is made available as an output variable. The effect of the various paramters of clock_1.xbe on $y(t)$ is shown in the following figures.
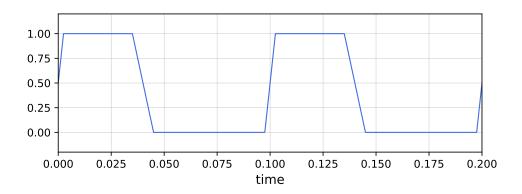
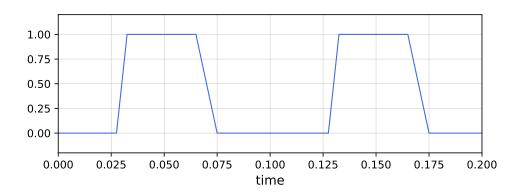Figure 1: $y(t)$ obtained with y_high $= 1$, f_hz $= 10$, delta1 $= 0.005$, delta2 $= 0.01$, D $= 0.4$. t0 $= 0$.

Figure 2: $y(t)$ obtained with y_high $= 1$, f_hz $= 10$, delta1 $= 0.005$, delta2 $= 0.01$, D $= 0.4$. t0 $= 0.03$.
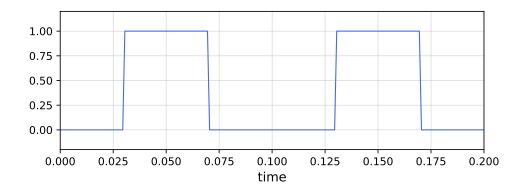

Figure 3: $y(t)$ obtained with y_high $= 1$, f_hz $= 10$, delta1 $= 0.001$, delta2 $= 0.001$, D $= 0.4$. t0 $= 0.03$.