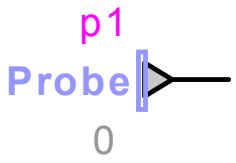
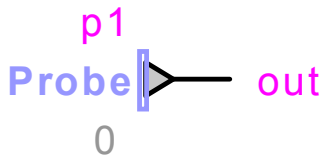
Simulation probe



1 Description

This device monitors the following simulation variables: simulation time, simulation time step, simulation stop time, and simulation base frequency.

1.1 Pins



This device has one signal pin:

pin	*description*	*value when unconnected*
out	output	as measured

1.2 Parameters

Selection options for the type of meter:

meter type	*units*	*output value*
no probe		0
simulation time	s	present time of the simulation
simulation time step	s	base time step of the simulation
simulation stop time	s	stop time of the simulation
simulation base frequency	Hz	base frequency of the simulation

simulation base frequency	rad/s	base frequency of the simulation

1.3 History

Selection options for the history value of the output signal:

option	*value*	*rules*
not defined	history(t) = undefined	
zero	history(t) = zero	
constant value	history(t) = user-defined value	any value
function value	history(t) = user-defined function	constant or f(t)

1.4 Scopes

Setting the scope flag enables monitoring of the output signal during the simulation.

1.5 Output signal interpolation

During the simulation, the output value of this device is calculated at successive instants *t* at intervals Δt. Between these simulation instants, the output value can be set to vary in one of two modes, ramped or stepped:

mode	*output value between* $t-\Delta t$ *and* t^-	*value at* t^-	*value at* t
ramped	interpolated linearly between values $out(t-\Delta t)$ and $out(t^-)$	calculated at t^-	calculated at t
stepped	remains at $out(t-\Delta t)$	remains at $out(t-\Delta t)$	calculated at t

2 Time-domain representation

In the time-domain calculation at t>0, the output value is the value of the measured simulation quantity.

3 Steady-state representation

In the steady-state calculation at t=0, the output value is calculated as follows:

if history is defined, $out(0) = history(0)$

else $out(0) =$ value of the measured simulation quantity (1)

4 Netlist

4.1 Netlist format for no probe

Netlist format:

```
_c_cst;name;1;1;out,
0,step/ramp,scope,
```

field	*description*	*value*
c_cst name 1 1	part name instance name pin count pin count	
out	signal name of the output	
0	output value	
step/ramp	output interpolation	"S1" for stepped "S0" for ramped
scope	monitoring, optional	"?s" for enabled

The comma separated data is saved into the ParamsA attribute of this device.

4.2 Netlist format for simulation probe

Netlist format:

```
_c_prbsim;name;1;1;out,
history,kind,step/ramp,scope,
history function expression
```

field	*description*	*value*
c_prbsim name 1 1	part name instance name pin count pin count	
out	signal name of the output	
history	history	constant value or "H" for function
kind	kind of probed variable	1: time 2: time step 4: stop time 11: freq Hz 21: freq rad/s
step/ramp	calculation mode	"S1" for stepped "S0" for ramped
scope	monitoring, optional	"?s" for enabled
history function expression	optional, required when history field is "H"	

The comma separated data is saved into the ParamsA attribute of this device. The history function expression is saved into the ModelData attribute.