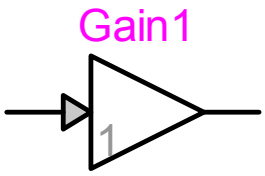
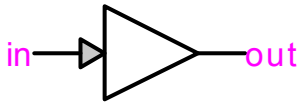
Control device : gain



1 Description

This device applies a gain C to the input signal. The gain is a user-defined parameter of constant value.

1.1 Pins



This element has two signal pins:

pin	*description*	*value when unconnected*
In	input	0
out	output	as calculated

1.2 Parameters

Selection options for the gain value:

gain	*output value*
1	$\mathrm{out}(t) = \mathrm{in}(t)$
constant value	$\mathrm{out}(t) = \mathrm{in}(t) \cdot \mathrm{gain}$

1.3 History

No user-defined history is required.

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 the element 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 calculated as follows:

$$out(t) = in(t) \cdot gain \qquad (1)$$

3 Steady-state representation

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

$$out(0) = in(0) \cdot gain \qquad (2)$$

4 Netlist

4.1 Format

Netlist format:

```
_c_gain;name;2;2;out,in,
gain,step/ramp,scope,
```

field	*description*	*value*
c_gain name 2 2	part name instance name pin count pin count	
out in	signal name of the output signal name of the input	
gain	gain value	any 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.