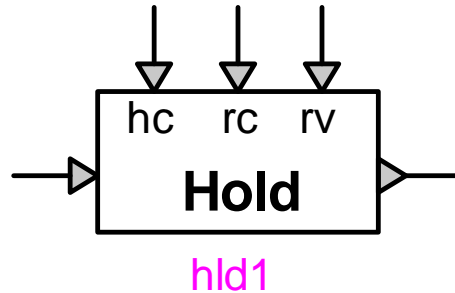


Control device : hold



1 Description	1
1.1 Pins	1
1.2 Parameters	2
1.3 History	2
1.4 Scopes	2
1.5 Output signal interpolation	2
2 Time-domain representation	2
3 Steady-state representation	2
4 Netlist	3
4.1 Format	3

1 Description

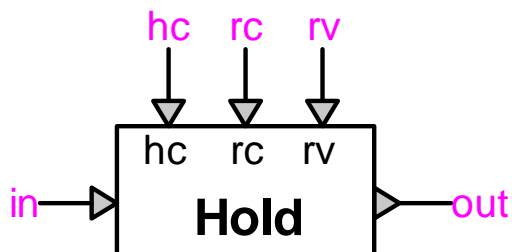
This device, when uncontrolled, passes the value of the input signal to the output.

When the hold control signal hc is >0 , the output maintains its previous value.

When the reset control rc is >0 , regardless of the hold control hc , the output takes the reset value rv .

If the reset value signal rv is unconnected, the reset value is zero.

1.1 Pins



This device has five signal pins:

<i>pin</i>	<i>description</i>	<i>value when unconnected</i>
in	input	0
hc	hold control	0
rc	reset control	0
rv	reset value	0
out	output	as calculated

1.2 Parameters

No user-defined parameters are required.

1.3 History

Selection options for the history value of the output signal:

<i>option</i>	<i>Value</i>	<i>rules</i>
zero	history(t) = zero, inherit from input when rc and hc are zero	any value, 0 is as selecting zero, use 0.0 to get actual 0. constant or f(t)
constant value	history(t) = user-defined value	
function value	history(t) = user-defined function	

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:

<i>mode</i>	<i>output value between $t - \Delta t$ and t^-</i>	<i>value at t^-</i>	<i>value at t</i>
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:

$$\begin{aligned}
 &\text{when } rc(t) > 0, \quad out(t) = rv(t) \\
 &\text{else when } hc(t) > 0, \quad out(t) = out(t - \Delta t) \\
 &\text{else} \quad \quad \quad out(t) = in(t)
 \end{aligned} \tag{1}$$

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 if rc(0) > 0,      out(0) = rv(0)
else                   out(0) = in(0)

```

(2)

4 Netlist

4.1 Format

Multi-line netlist format:

```

_c_hld;name;5;5;out,in,hc,rc,rv,
history,step/ramp,scope,
history function expression

```

<i>field</i>	<i>description</i>	<i>value</i>
c_hld	part name	
name	instance name	
5	pin count	
5	pin count	
out	signal name of the output	
in	signal name of the input	
hc	signal name of the hold control	
rc	signal name of the reset control	
rv	signal name of the reset value	
history	history	constant value or "H" for function
step/ramp	output interpolation	"S1" for stepped "S0" for ramped
scope	monitoring, optional	"?s" for enabled
history function expression	optional, required when history field is "H"	