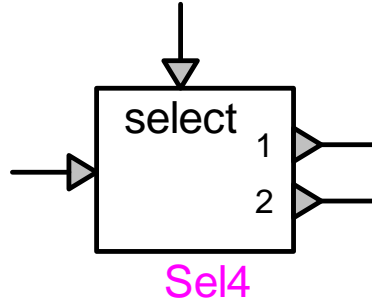


Control device : output selector

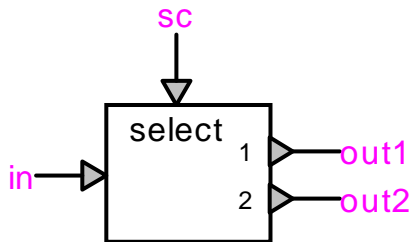


Control device : output selector	1
1 Description	1
1.1 Pins.....	1
1.2 Parameters	2
1.3 History	2
1.4 Scopes.....	2
1.5 Output signal interpolation.....	2
2 Time-domain representation	2
3 Steady-state representation.....	2
4 Netlist	3

1 Description

This control device passes the value of the input to one of the outputs, as determined by the value of the selection control signal. The value of a non-selected output is zero.

1.1 Pins



This device has four or more signal pins:

<i>Pin</i>	<i>description</i>	<i>value when unconnected</i>
In	input	0
Sc	selection control	0
out1	output 1	as calculated
out2	output 2	as calculated
...	more outputs	as calculated

1.2 Parameters

The following parameters can be specified:

<i>parameters</i>	<i>rules</i>
count of outputs	$2 \leq n \leq 32$
Initial selection at t=0	

1.3 History

No user-defined history is required.

1.4 Scopes

Setting the scope flag enables monitoring of the output values of a device during the simulation. When scopes are labeled by the corresponding device name, the output values of an output selector are identified as "devnamei", where devname is the name of the device, and i is the index of the output.

1.5 Output signal interpolation

During the simulation, the output values of the element are calculated at successive instants t at intervals Δt . Between these simulation instants, the output values 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 values are calculated as follows:

$$\begin{aligned} out_k(t) &= in(t), \text{ where } k = \max(1, \min(n, sc(t))) \\ out_j(t) &= 0, \text{ where } j \neq k \end{aligned} \quad (1)$$

3 Steady-state representation

In the steady-state calculation at $t = 0$, the output values are calculated as follows:

$$\begin{aligned}
 &\text{if } k_0 > 0, \quad \text{out}_{k_0}(t) = \text{in}(t), \quad \text{where } k_0 = \text{initial selection index} \\
 &\quad \text{out}_j(t) = 0, \quad \text{where } j \neq k_0 \\
 &\text{else} \quad \text{out}_k(t) = \text{in}(t), \quad \text{where } k = \max(1, \min(n, \text{sc}(0))) \\
 &\quad \text{out}_j(t) = 0, \quad \text{where } j \neq k
 \end{aligned} \tag{2}$$

4 Netlist

Netlist format:

```
_c_selout;name;npins;npins;list(outputs),sc,in,
k0,step/ramp,scope,
```

<i>field</i>	<i>description</i>	<i>value</i>
<code>c_selout</code>	part name	
<code>name</code>	instance name	
<code>npins</code>	pin count	2+count(outputs)
<code>npins</code>	pin count	2+count(outputs)
<code>list(outputs)</code>	signal names of the outputs	
<code>sc</code>	signal name of the selection control	
<code>in</code>	signal name of the input	
<code>k0</code>	selection index at t=0	
<code>step/ramp</code>	calculation mode	"S1" for stepped "S0" for ramped
<code>scope</code>	monitoring, optional	"?s" for enabled