

## s\_pi\_limiter\_2 (subcircuit)

### Attributes

```
inputs: x
outputs: y
e_left_nodes:
e_right_nodes:
e_top_nodes:
e_bottom_nodes:
parameters:
  k: 1
  tau: 1
  xmax: 10
  xmin: -10
  y20: 0
```

### Description

s\_pi\_limiter\_2 is a PI controller which satisfies the following equations.

$$\begin{aligned}y_1 &= k x, \\y_2 &= \frac{k}{\tau} \int x dt, \\y &= y_1 + y_2.\end{aligned}$$

Each of  $y_2$  and  $y$  is limited to the range  $x_{\min}$  to  $x_{\max}$ .