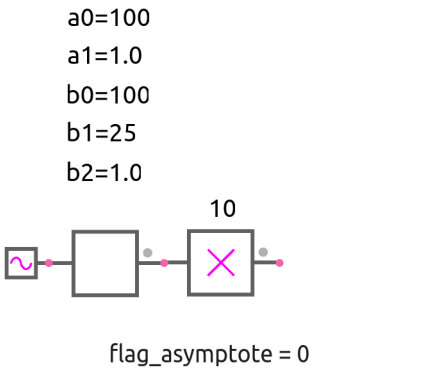
test_filter_4a.sqproj



Shown in the figure is a filter given by

$$H(s) = 10 \times \frac{a_0 + a_1 s}{b_0 + b_1 s + b_2 s^2}\,. \tag{1}$$

Exercise Set

1. With the coefficient values as specified in the figure, draw the asymptotic gain and phase plots (Bode plots) for the filter for $0.1\,\text{Hz} < f < 1\,\text{kHz}$. The frequency and gain axes should be logarithmic, and the phase axis should be linear.

2. Compare your plots with simulation results obtained by setting the global parameter `flag_asymptote` to 1.

   (Note that the output is equal to the transfer function since the filter input $\mathbf{V}_i$ is set to $1\angle 0$.)

3. Compare the asymptotic plots with the actual gain and phase plots obtained by setting `flag_asymptote` to 0.