

filter_z1.gce

Attributes

```
mainvars: x y
stparams: x_sv=0 y_sv=0
iparms: flag_asympt=0
rparams: a0=1 a1=1 f0=0.15915
```

Description

`filter_z1.gce` satisfies the s -domain relationship,

$$y(s) = (a_0 + a_1 s) x(s).$$

`f0` specifies the frequency value to be used for scaling of the filter coefficients, the default value being $1/2\pi$ Hz. The start-up parameters `x_sv`, `y_sv` provide the starting value for `x`, `y` in start-up simulation.

Note that there are two options for assigning the filter coefficients:

- (a) Enter coefficients for $\omega_c = 1$ rad/s and then enter the actual (desired) f_c in Hz.
- (b) Enter coefficients as required for the desired f_c but leave the default value of `f0` unchanged.

In the first case, the coefficients will be changed internally; in the second case, they will be taken as assigned by the user.

In AC analysis, the above equation holds (with $s = j\omega$). The integer parameter `flag_asympt` is useful for plotting the Bode approximations (magnitude and phase) of a transfer function. When this flag is set to 1, the Bode approximation is used; if it is 0, normal (i.e., exact) computation of $y(s)$ is carried out.