

Observe requests on devices

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The Observe data tab allows requesting observable variables from a device. Observable variables are device variables that can be used as control signals and connected to control device input pins. This feature is available only for time-domain simulations and the selected signals are observed at each simulation time-point.

1 Visible pin observables

Some devices are given an explicit pin for connecting to the observable signal. The “V controlled” device shown in Figure 1-1, for example, has a bundle pin for observable signals. The contents of the bundle are initially empty (select the bundle and select “Breakout” from the right-click menu). When the observables “v” and “i” are turned on from the Observe data tab, the “Breakout” menu now allows placing the selected pins in the bundle and connecting to arbitrary control device input pins. This is shown in Figure 1-2. The bundle “Breakout” panel is shown in Figure 1-3.

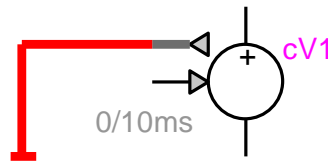


Figure 1-1 The “V controlled” device with an empty bundle pin

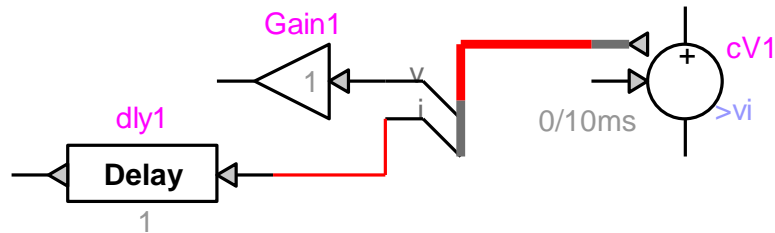


Figure 1-2 Connecting to observable signals through bundle pins

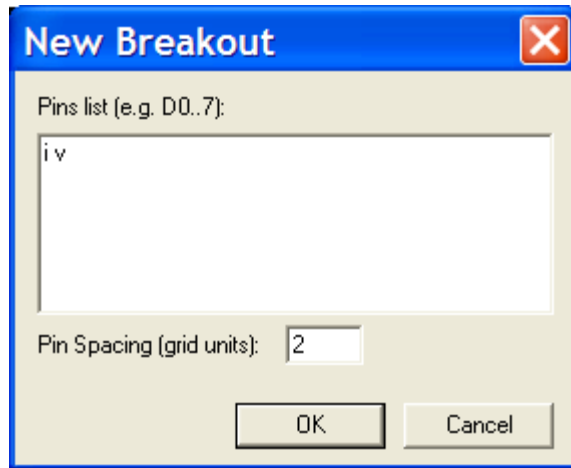


Figure 1-3 The “Breakout” panel

As in standard “Breakout” rules, it is not necessary to place all available pins. Adding extra pins has no significance for the device, but its bundle can be used for channeling. If the added pin name is a valid observable signal pin name, such as “p” in Figure 1-3, then it will not become available unless explicitly turned (checked) on in the Observe tab.

2 Invisible pin observables

There are also devices that do not possess explicit pins for connecting observable signals. In such cases the device name, preceded by the observable signal name with an underscore is made into a control signal and becomes available as a control signal. This is a visual connection method. The example of Figure 2-1 illustrates the connection of energy (“e”) and power (“p”) observables from the “ZnO” device named “ZnO1”.

It is required to append the phase character (“a”, “b” or “c”) to the device name when the device is 3-phase.

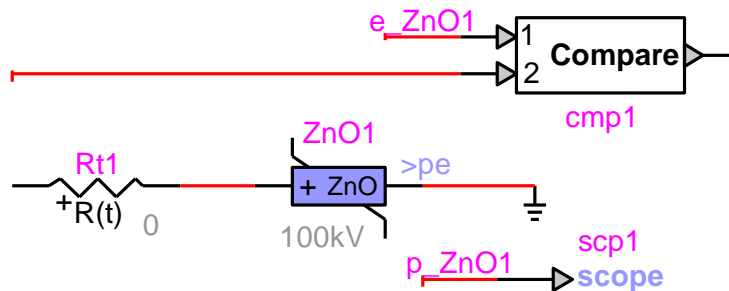


Figure 2-1 Example of extraction of observable signals without visible pins on the selected device

3 Visual indicator

When an observable variable is checked in a device Observe tab, EMTWorks turns on a visual indicator. The visual indicator format is a greater than “>” sign followed by the selected observable or observables.

The visual indicator is saved into the device attribute “Description”.