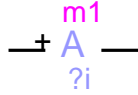


Current scope and observe



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Jean Mahseredjian, 12/29/2013 1:35 AM

1 Description

This device is used to measure the current flowing through it from the left pin to the right pin. It can also measure power. The power measurement p is given by $p = v_k i$ where v_k is the voltage to ground on the k-pin (left pin) and i is the current. The measurements can be sent to scopes or observed by control devices. In the example of Figure 1 the current is available in the scope group "is" (Switch Current) with the name "m1" and the observed current is connected to a control device "Gain1".

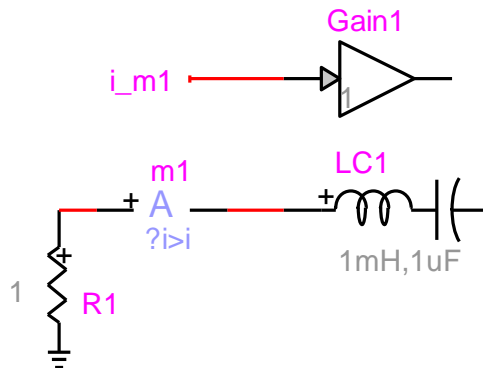


Figure 1 Example of usage with observed variable i

This device can also become 3-phase. In the example of Figure 2 it is shown in its 3-phase version and the control device is now set to access the phase-a current.

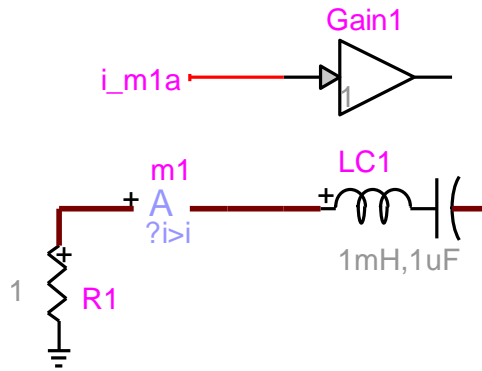


Figure 2 Example of usage as 3-phase device

1.1 Parameters

There are no parameters for this device. Only current and power selection checkboxes.

1.2 Rules

Since the internal model of this device is an ideal switch, it is not allowed to connect such devices in parallel. EMTF will encounter difficulties in splitting the current between two wires.

It is not allowed to delete any pins.

When the device is in its 1-phase state and its signal is changed to 3-phase, the selections for the 1-phase version are automatically propagated to all phases.

2 Netlist format

The Netlist format for the 1-phase version is given by:

```
_SwMeter;m1;2;2;left,right,
?i,>i,
```

Field	Description
<code>_SwMeter</code>	Part name
<code>m1</code>	Instance name, any name.
<code>2</code>	Total number of pins
<code>2</code>	Number of pins given in this data section
<code>left</code>	Signal name connected to k-pin, any name
<code>right</code>	Signal name connected to m-pin, any name
<code>?</code>	Scope requests, i means current, p means power
<code>></code>	Observe requests, i means current, p means power

The 3-phase is simply a repetition with the phase character automatically appended to names and signals. Example:

```
_SwMeter;m1a;2;2;s6a,s3a,
?i,>i,
_SwMeter;m1b;2;2;s6b,s3b,
?i,>i,
_SwMeter;m1c;2;2;s6c,s3c,
?i,>i,
```

Device data fields are saved in ParamsA, ParamsB and ParamsC device attributes.

3 Steady-state model

Permanently closed ideal switch.

4 Frequency Scan model

Permanently closed ideal switch. The measured current is in frequency domain. Power measurements and observables are not available.

5 Time-domain model

Permanently closed ideal switch. All measurements and observables are available in time-domain.