xfmr_level0_1ph_1_3.ebe

Attributes

```
ebe name=xfmr_level0_1ph_1_3
#
# one primary winding, three secondary windings
# (No magnetizing inductance)
#
Jacobian: constant
nodes: p_p  p_n  s1_p  s1_n  s2_p  s2_n  s3_p  s3_n
state_vars:
aux_vars: cur_p_p  cur_s1_p  cur_s2_p  cur_s3_p
aux_vars_startup:
x_vars:
iparms:
sparms:
rparms:
+  p_turns=1
+  s1_turns=1
+  s2_turns=1
+  s3_turns=1
stparms:
+  ip0=0 is10=0 is20=0 is30=0
igparms:
outparms: ip is1 is2 is3 vp vs1 vs2 vs3
```

Description

xfmr_level0_1ph_1_3.ebe is a transformer with one primary and three secondary windings. It incorporates the following equations.

$$\frac{V_p}{N_p} = \frac{V_{s1}}{N_{s1}}, \tag{1}$$

$$\frac{V_p}{N_p} = \frac{V_{s2}}{N_{s2}}, \tag{2}$$

$$\frac{V_p}{N_p} = \frac{V_{s3}}{N_{s3}}, \tag{3}$$

$$N_p i_p + N_{s1} i_{s1} + N_{s2} i_{s2} + N_{s3} i_{s3} = 0, \tag{4}$$

where N_p, N_{s1}, N_{s2}, N_{s3} are given by the real parameters p_turns, s1_turns, s2_turns, s3_turns, respectively.

The terminal currents i_p, i_{s1}, i_{s2}, i_{s3}, and voltages V_p, V_{s1} V_{s2} V_{s3} (see figure) are made available as output variables ip, is1, is2, is3, vp, vs1, vs2, vs3, respectively.
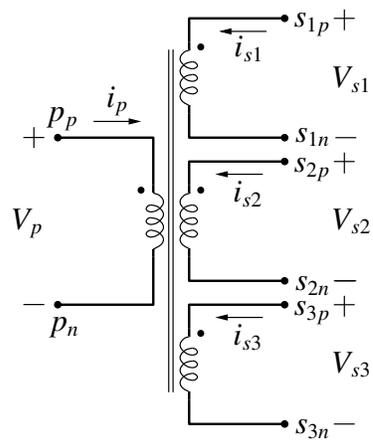
Figure 1: `xfmr_level0_1ph_1_3` model.