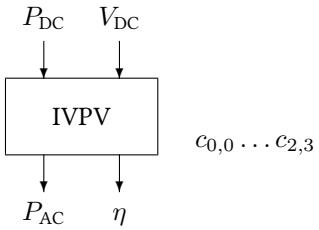
Block IVPV

The IVPV block simulates inverter losses as a function of DC power and voltage.





Name	IVPV
Function	se0029
Inputs	2
Outputs	2
Parameters	12
Strings	0
Group	S

Inputs

1	AC power P_{AC} / W
2	DC voltage V_{DC} / V

Outputs

1	AC Power output P_{AC} / W
2	Efficiency η

Parameters

1	Fit coefficient $c_{0,0}$ / W
2	Fit coefficient $c_{0,1}$ / A
3	Fit coefficient $c_{0,2}$ / A V^{-1}
4	Fit coefficient $c_{0,3}$ / A V^{-2}
5	Fit coefficient $c_{1,0}$
6	Fit coefficient $c_{1,1}$ / V^{-1}
7	Fit coefficient $c_{1,2}$ / V^{-2}
8	Fit coefficient $c_{1,3}$ / V^{-3}
9	Fit coefficient $c_{2,0}$ / A^{-1} $V^{-}1$
10	Fit coefficient $c_{2,1}$ / A^{-1} $V^{-}2$
11	Fit coefficient $c_{2,2}$ / A^{-1} $V^{-}3$

12 Fit coefficient $c_{2,3}$ / $\mathrm{A}^{-1}\,\mathrm{V}^{-}4$

Strings

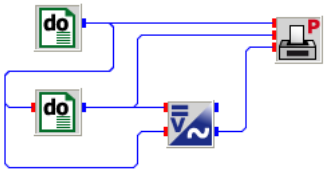
None

Description

The efficiency of the inverter is calculated from the empirical equation

$$P_{\text{loss}} = c_{0,0} + c_{0,1}V + c_{0,2}V^2 + c_{0,3}V^3 + (c_{1,0} + c_{1,1}V + c_{1,2}V^2 + c_{1,3}V^3)P + (c_{2,0} + c_{2,1}V + c_{2,2}V^2 + c_{2,3}V^3)P^2$$

ivpv.vseit



Two nested DO blocks vary voltage (outer block) from 300 to 600 V in steps of 100 V and DC power from 0 to 5000 W in steps of 10 W, respectively. The parameters of the IVPV block are taken from a publication of the 20th EUPVSEC for a SolarMax SM6000 inverter.

The voltage-dependent efficiency curves are plotted by a parametric PLOTP block.

