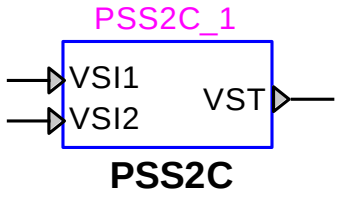
Exciters and Governors: Power System Stabilizer PSS2C



Exciters and Governors: Power System Stabilizer PSS2C 1
1 Description 1
1.1 Pins 1
1.2 Parameters 1
1.2.1 Data tab 1
2 Initial conditions 2
3 References 2

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1 Description

This device is an implementation of the IEEE type PSS2C power system stabilizer model. This device is implemented as described in [1]. Implementation details can be viewed by inspecting the subcircuit of this device. The exponents M and N of the “ramp-tracking” filter are 2 and 4, respectively.

1.1 Pins

This device has 3 pins:

Pin name	Type	Description	Units
VSI1	Input	Speed	pu
VSI2	Input	Electrical power	pu
VST	Output	PSS output (equivalent of terminal voltage)	pu

1.2 Parameters

The default set of parameters can be found in [1].

1.2.1 Data tab

The parameters on the Data tab are:

1. **Gain K_{S1}**: power system stabilizer gain
2. **Gain K_{S2}**: power system stabilizer gain
3. **Gain K_{S3}**: power system stabilizer gain
4. **Time constant T_6**: transducer time constant
5. **Time constant T_7**: transducer time constant
6. **Time constant T_{W1}**: washout time constant
7. **Time constant T_{W2}**: washout time constant
8. **Time constant T_{W3}**: washout time constant

9. **Time constant T_{W4}**: washout time constant
10. **Filter time constant T_8**: transducer time constant
11. **Filter time constant T_9**: washout time constant
12. **Lead time constant T_1**: numerator (lead) compensating time constant (first block)
13. **Lag time constant T_2**: denominator (lag) compensating time constant (first block)
14. **Lead time constant T_3**: numerator (lead) compensating time constant (second block)
15. **Lag time constant T_4**: denominator (lag) compensating time constant (second block)
16. **Lead time constant T_{10}**: numerator (lead) compensating time constant (third block)
17. **Lag time constant T_{11}**: denominator (lag) compensating time constant (third block)
18. **Lead time constant T_{12}**: numerator (lead) compensating time constant (fourth block)
19. **Lag time constant T_{13}**: denominator (lag) compensating time constant (fourth block)
20. **Maximum output V_{STMAX}**: Maximum PSS output
21. **Minimum output V_{STMIN}**: Minimum PSS output
22. **Maximum input V_{SI1MAX}**: Input signal #1 maximum limit
23. **Minimum input V_{SI1MIN}**: Input signal #1 minimum limit
24. **Maximum input V_{SI2MAX}**: Input signal #2 maximum limit
25. **Minimum input V_{SI2MIN}**: Input signal #2 minimum limit
26. **PSS activation P_{PSSON}:** Generator MW threshold for PSS activation
27. **PSS de-activation V_{PSSOFF}:** Generator MW threshold for PSS de-activation

2 Initial conditions

The initial output signal is zero from the steady-state solution.

3 References

[1] "IEEE Recommended Practice for Excitation System Models for Power System Models for Power System Stability Studies," IEEE Standard 421.5-2016.